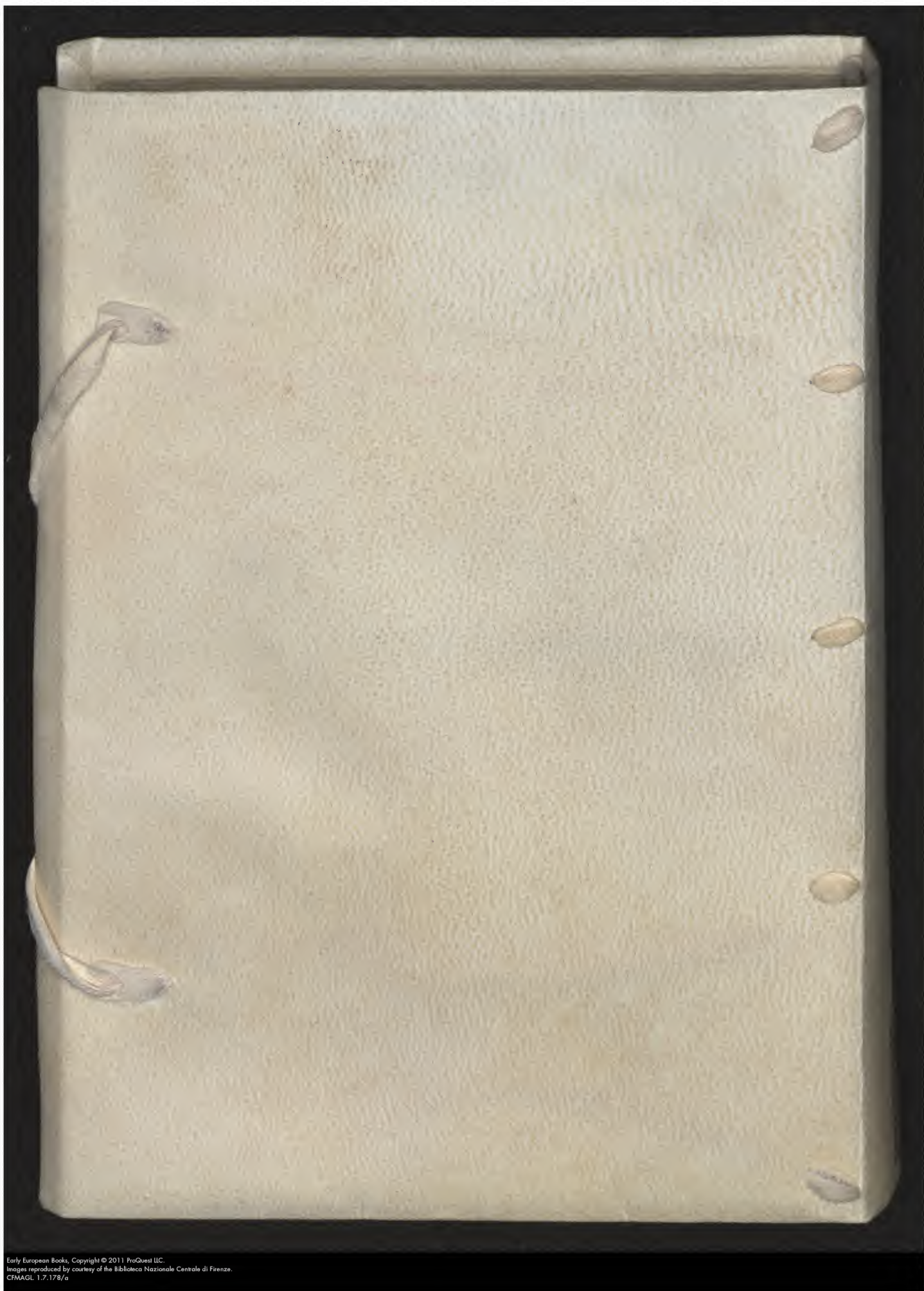
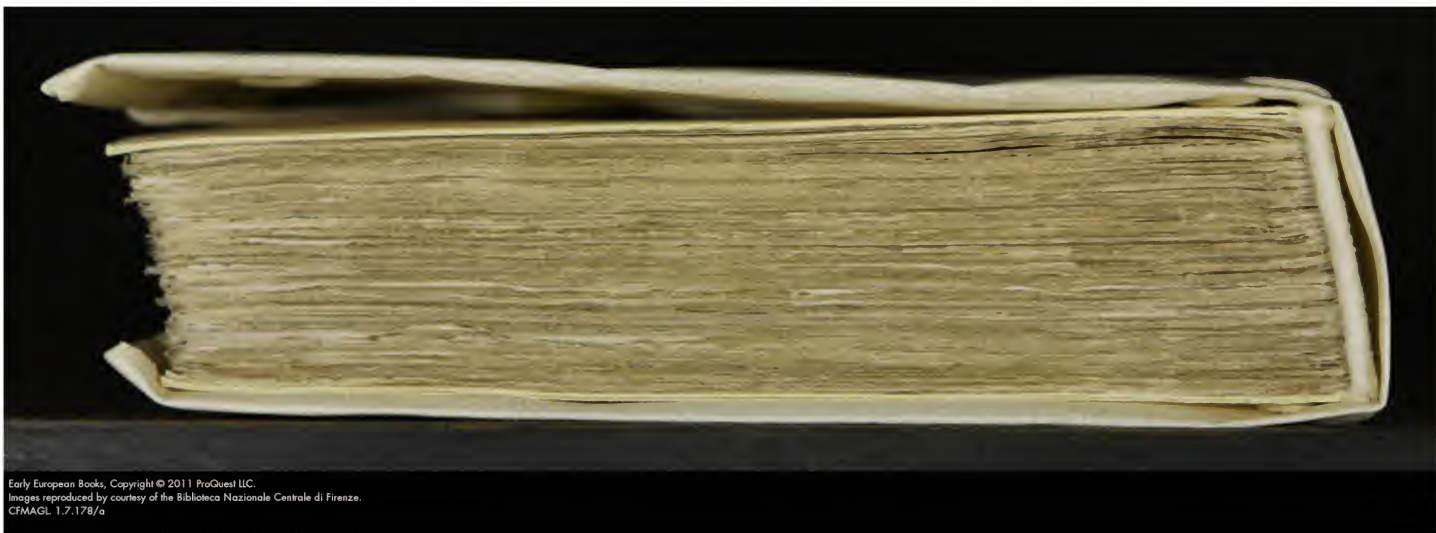






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B I F O R M I S
GNOMONICÆ
SYNOPSIS

PARS SECUNDA TABULARIS,
Theorico-Practica.

De Horologijs Solaribus describendis per Tabulas Gnomonicas,
Duos Libros continens,

In quorum

PRIMO traditur cū Vniuersalis pluriformium Tabularum Gnomonicarum Methodus,
omnium facillima, & expeditissima, ex Ratiocinio, & Analyſi Triangulorum, per
calculos vtriusque Trigonometriæ, Linearis ſcilicet ac Logarithmicæ: Tūc Specialis
Methodus omnium pulcherrima, Peripheriæ, & Regulæ D. Ioannis Paduanij Vero-
nensis, Demonſtratione, breuitate, & facilitate mirum in modum illustratur.

IN SECUNDO habentur Tabulæ ipſæ, iuxta Methodum Paduanij eiſdem, concin-
natæ ad ſingulos gradus Declinationis Muralis, ad Ortum, & ad Occaſum; ſub
latitudine Poli grad. 45. ſcilicet Almæ, & Imperantis Vrbis Venetiarum,
& aliorum locorum quamplurimum, in eodem circiter parallelo, per
Europam, Aſiam, & Americam, exiſtentium.

S Y L L O G E O
AVGVSTINO A' PVTEO

I. V. D. AC MATESIPHILO.



VENETIIS, Typis Antonij Boſij, M.DC.LXXIX.

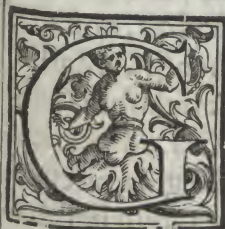
SVPERIORVM PERMISSV.

B I F O R M I S
 G E O M O N I C A
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 A U G U S T I N O A P O S T O L I
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 E R E T I C O R U M
 A U G U S T I N I
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PROOEMIUM



Geometricam hæcenus, & Arithmeticam
Simplicem de Solaribus Horarijs de-
scribendis, pro nobili quadam, & dele-
ctabili iuuentutis exercitatione, tum in
Geometria, & Arithmetica Elementari;
tum in Sphæricis, & Conicis, qua potui,
breuitate, & claritudine prosequer. Quæ quidem Me-
thodus, quantum Geometriæ Theoreticæ cognitionis, &
luminis afferat Speculanti, etiam in abditissimis Mathema-
tum arcanis, quisque primoribus saltem labris, vt dicitur,
gustare potuit. Cum tamen practicè ob multiplicem li-
nearum parallelarum, & perpendicularium descriptio-
nem, arduam, operosam, & erroribus obnoxiam ean-
dem experiantur omnes, cæteroquin etiam expertissimi:
Mathematici quidam, Triangulorum ducti ratiocinio,
aliam non immeritò inire viam, per Tabulas videlicet
Gnomonicas, constructas ex Azimuth, & Almucantarath,
Solis nempe Circumferentijs, & Altitudinibus, in Vmbra
conuersis, quas proinde horarum longitudes, & latitu-
dines voluerunt appellari. Sed huic quoque Methodo, li-
cet minùs, quàm cæteris discrimen foret errandi, nec suus
defuit labor, in Tabulis supputandis; nec in earum vsu

morosa prolixitas . Quapropter utrique incommodo D. Hyppolitus Salodius faciliori calculo, Normæque Adminiculo ingeniosè conatus est occurrere . Sed (ut omittam reliqua) de Plagis horarum, quænam scilicet hora cadat in Plagam Australem, aut Borealem, quæue in Orientalem, vel Occidentalem, non parua mentis vexatio adhuc remansit Horographo. Quæ tandem difficultas, noua, & ingeniosissima D. Ioannis Paduanij Veronensis, Mathematici præstantissimi inuentione, qua Tabularum Gnomonicarum vsum, Peripheria in plano defixa, ad vnicam, simplicem, vniformem, & infallibilem Regulæ circumgyrandæ perstrinxit operationem, sublata foeliciter euauit. Inuentio sanè ob facilitatem, simplicitatem, & certitudinem operandi, admirabilis! & cæteris vtcunque inuentis, omnium præferenda suffragijs! Attamen, nec ista tam præclara, & facilis inuentio, Tabulis in efformandis quidquam leuat insudandi necessitatem; nec studiosus Theophili Bruni labor, siue compendij, siue facilitatis multum attulit; imò adhuc (quod sanè displicet) pulcherrimum demonstrationis lumen, cæcis supputationum nubibus penitus inuolutum, omninò torpescit otiosum. Hunc igitur lapidem, duplici ex capite prægrauem, opere pretium fore putavi, si pro mei tenuitate ingenij, hac in Secunda Parte Synopses Gnomonices mouere contenderem; ut nimirum adhibito Prostaphæreseos, & Logarithmicæ Trigonometriæ calculo, Tabularum Gnomonicarum supputatio quam breuissima, & perquam facillima euaderet; singulisque Problematis, siue Praxibus, præ-

misso,

do D.
Admi-
mittam
a cadat
rienta-
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qua, &
Mathe
Gno-
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er eua-
& cer-
que in-
n, nec
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ilitatis
alcher-
onum
osum.
, ope
hac in
onten-
Loga-
omo-
facilli-
s, pra-
miffo,

misso, & exposito Analemme, obnubilata Demonstrationis aliqua species in lucem tandem erumperet; quâ Mathematicarum studiosi vtramque Trigonometriam, Linearem scilicet, ac Logarithmicam, vtili delectatione exercerent, & delectabili vtilitate in Praxim redigerent. Quæ si aliquo modo affecutus fuero, SOLI TRIADI SACRATISSIMÆ laus esto, sin minus meæ computetur imbecillitati, faciliora tamen, si ei vacasset, adhuc molituræ.

Diuidetur autem Liber iste in duo Capita, quorum primum, Calculum omnibus Tabulis Gnomonicis communem, vniuersalissima Methodo, pro quolibet horarum genere, in toto terrarum Orbe, Lineariter, & Logarithmicè proponet, & explicabit: Secundum, Fabricam Tabularum Gnomonicarum, iuxta specialem Methodum D. Ioannis Paduanij, Compendiosissimo calculo, & summa facilitate demonstrabit.



INDEX

INDEX CAPITVM, ET PRAEVEVM

Primi Libri Secundæ Partis SYNOPSIS GONONONICÆ BIFORMIS.

CAP. DE Præquisitis ad Gnomonicas Tabulas supputandas.	pag. 1
1. Praxis I. Declinationem Solis indagare.	ibid.
Praxis II. Altitudinem Poli inquirere ex Vmbris Meridianis.	2
Praxis III. Datis elevatione Poli, & cuiuslibet puncti Cælestis declinatione, indagare differentiam Ascensionalem Arcum Semidiurnum, ac Seminocturnum; & declinationem eiusdem.	5
Methodus inveniendi Arcus perpetuæ lucis, & Vmbræ; siue perpetuæ Diei, ac Noctis, ad quancumque propositam latitudinem Poli maiorem grad. 66. m. 30.	7
Praxis IV. Data Declinatione Solis, & Altitudine Aequatoris, Altitudinem Meridianam Solis quouis tempore inuenire.	8
Praxis V. Data utraque Altitudine Meridiana (per præcedentem praxim) indagare Altitudinem Solis in circulo horæ sextæ Astronomice constituti.	ibid.
Praxis VI. Altitudinem Solis in Verticali primario constituti, indagare.	9
Praxis VII. Angulos horarios, siue distantias horarias horarum Astronomicarum, seu à Meridie, & media nocte; Ab Ortū, & ab Occasu; & horarum Inæqualium assignare pro Horologijs Horizontalibus, & Verticalibus directis.	ibid.
Praxis VIII. Datis Solis Altitudine maiori generali, & eiusdem Altitudine in circulo horæ sextæ Astronomicæ (ex quinta praxi,) ac distantia horaria à Meridiano, (per præced. Prax.) Altitudinem Solis supra Horizontem, quacumque hora data, exquirere; Circa quam dantur tres casus.	11
Casus primus, quando scilicet duo latera data quadrantem exæquant.	12
Casus secundus, quando latera trianguli coniunctim sunt quadrantem minora.	13
Casus tertius, datis duobus cruribus coniunctim quadrante minoribus.	15
Methodus indagandæ Altitudinis Solis existentis in Aequatore.	16
Calculus Altitudinum Cancræ, & Capricorni.	17
Omnium Altitudinum Cancræ, & Capricorni singularum horarum, calculi paradigma.	18
De reliquis Signorum parallelis.	20
Praxis IX. Data (ex antecedenti praxi) Altitudine Solis, quacumque hora, & in quouis parallelo, Vmbram illius Gnomonicam, tum rectam, tum versam metiri.	24

Pra.

INDEX.

Praxis X. Datis Angulo horario, & Altitudine Solis, Azimuth eiusdem calculo inn-	
figare.	pag. 25
Praxis XI. De Speciali Calculo Altitudinum horarum Astronomicarum, & horarum In-	
aqualium. siue Antiquarum; & pro horarijs construendis in Regionibus sub Altitudi-	
ne Poli maiori gradibus 66. m. 30.	26
Dereliquis supputationibus, Azimuthorum, scilicet, & Vmbrarum pro omnibus hora-	
rum generibus.	31
CAP. II. Datis ex precedenti capite Altitudinibus, Vmbris, & Azimutibus Tabulas	
Gnomonicas construere, iuxta Methodum Ioannis Paduanij Veronensis.	31
Praxis I. Tabulam Horologij Horizontalis ordinare.	ibid.
Praxis II. Tabulam Horologij Verticalis, Meridiem, & Boream directè aspicientis con-	
struere.	36
De Angulis siue distantijs horarijs.	37
De Calculo generali trium Inuentorum priorum pro Altitudinibus.	38
Speciales calculi Altitudinum Capricorni & Cancri.	40
Calculus Azimuthorum vtriusque Tropici.	44
Praxis III. Tabulas pro Horologijs Declinantibus à Meridiano construere.	47
De Angulis siue distantijs horarijs.	49
De Calculo Altitudinum in communi.	51
Specialis calculi Altitudinum, & Azimuthorum Capricorni pro Tabula vtriusque	
Horarij declinantis ad Ortum grad. 54 & Cancri pro declinante usdem gradibus ad Oc-	
casum.	ibid.
Speciales calculi Altitudinum, Vmbrarum, & Azimuthorum Cancri declinantis ad	
Ortum, & Capricorni ad Occasum	56
Speciales calculi Altitudinum & Azimuth horarum Aequatoris.	62
Arcus Peripheria pro declinantibus ab Austro, & ab Aquilone ad Ortum componere.	
pag. 66	
Arcus eosdem Peripheria conficere pro declinantibus ab Austro, & ab Aquilone ad Oc-	
casum.	67
Praxis IV. Tabulas construere pro Horologijs Verticalibus directè Ortum, & Occasum	
aspicientibus.	68
De Calculo Altitudinum & Vmbrarum Gnomonicarum, & Azimuthorum Solis.	69
De reductione Arcuum Verticalium horarum ad Circuli Peripheriam in facie parietis	
Orientalis.	71
Arcus reducere ad Peripheriam pro Tabula Occidentali.	72
Calculi Altitudinum Vmbrarum, Azimuthorum & Arcuum vtriusque Tabulae, ac	
Tropici paradigmata.	ibid.
Praxis V. Tabulas calculo exarare pro Horologijs Sciathericis Polaribus.	76
De Distantijs Horarijs.	ibid.
De Calculo Altitudinum, Parallelorum extra Aequatorem.	77
Altitudines Aequatoris.	ibid.
De Vmbris.	ibid.
De Arcibus Azimutalibus in parallelis.	78
Arcus Azimutales Aequatoris.	ibid.
De	



M.

pag. 1
ibid.
2
indagare
declinatio
5
Noctis
7
Meridia-
8
lagare Al
ibid.
9
um, seu à
n assignare
ibid.
in circulo
mo, (per
ita, exqui
11
12
13
14
15
16
17
paradigma
18
20
in quouis
24
Pra-

INDEX.

De horum Arcuum reductione ad Arcus Peripheria pro Superficie Superiori.	pag. 78
Quod Sciathericum Horologium Polare cum integro Meridiano planè coincidit.	79
Praxis VI. De Polari communiter dicto, scilicet Declinante a Meridiano, describendo.	ibidem.
Altitudines, Vmbrae, & Arcus Azimuthales Cancræ, Aequatoris, & Capricorni supputare.	80
Praxis VII. De Sciathericis Aequinoctialibus.	82
De Altitudinibus, & Vmbrae.	ibid.
De Arcibus Azimuthalibus.	ibid.
Quomodo distantia reducantur ad Arcus Peripheria.	ibid.
Quod pro descriptione horarum, præter distantias Tropicorum, requiruntur distantiae alterius paralleli Aequatori viciniore.	83
Praxis VIII. Sciathericum Irregulare construere in Superficie Declinanti a Meridiano super quam eleuat Polus Horizontalis ac Cælum Terræ respicit.	84
Altitudines horarum inuenire, Sole in principio Tropicorum existente, quæ Methodus reliquis etiam omnium parallelorum punctis deservire poterit.	85
Data Solis Altitudine, & Angulo horario Arcus Azimuthales indagare.	86
Azimuth in Arcus Peripheria convertere.	87
Pro declinantibus ad Occasum.	88
Praxis IX. Sciathericum Horologium Irregulare construere in plano declinante, super quod eleuatur Polus Verticalis.	ibid.

		Errores	Correctio
pag.	lin.		
9	13	Tomologarith.	Tomologarith. 2.
12	41	respondeat	respondent
30	5	ex Altitudine	ex Altitudinis
32		In Figura ibidem posita	mutetur D, in C, & contra
69	41	esse B,	S B
72	14	gradibus 360.	graduum 360.
88	15	Superficies, quæ	dele, quæ
28		Vt in Meridionale	Vt si in Meridionale

GNO.

pag. 78
79
tribendo.
Capricorni
80
82
ibid.
ibid.
ibid.
stantia al-
83
ridiano su-
84
Methodus
85
86
87
88
te, super
ibid.



GNOMONICES BIFORMIS

SECUNDÆ PARTIS, TABVLARIS.

LIBER PRIMVS.

De Sciathericis omnibus, siue Horologijs Solaribus in Terrarum Orbe vniuerso delineandis per Tabulas Gnomonicas, Triangulorum ratiocinio, Lineariter, & Logarithmicè, ex Methodo in primis D. Ioannis Paduani Veronensis concinnatas.

De ijs, quæ vniuersè requiruntur ad Gnomonicas Tabulas supputandas. Caput Primum.

AD Gnomonicas Tabulas supputandas prærequiruntur, in primis Solis Declinatio; 2, Altitudo Poli; 3, Arcus diurni Parallelorum Solis; 4, Eiusdem Solis Altitudines; 5, Vmbre; 6, Azimutha.

Praxis I. Declinationem Solis indagare.

PRæsupposita Analemmatis esplicatione, quæ tradita est in libro primo, cap. 6. Episag. 3. Primæ Partis; necnon eorum, quæ ad Circulorum Verticalium, Altitudinum, & Horariorum demonstrationem lib. 1. eodem cap. 3. Episag 3. exposita sunt; præsens Diagramma, satis clarum appraet. Nam

A B L A,

GNO.

B L A, est Circulus horarius hora 1, vel 11, Astronomicarum, vel etiam quicunque Circulus declinationis, ut accipitur in presenti.

V L K, est quadrans Circuli Verticalis.

G I, Parallelus Tauri, & Virginis.

Æ P Q, est pars Eclipticæ Septentrionalis. Quibus positis.

- 2 Pro Solis declinationis indagine, talis adhibebitur Analogismus. Ut Radius; Ad sinum maximæ Solis declinationis grad. 23. m. 30. Ita Sinus distantiae, puncti Eclipticæ dati à proximiori Æquinoctio; Ad Sinum declinationis quæsitæ.

Exemplum. Quæritur declinatio Solis existentis in *m*, Tauri principio, quod à proximiori Æquinoctio Æ, Arietis, distat gradibus 30. nempe arcus Æ M; Sic proportionabitur canon.

Ut Radius T Æ, 100000. Ad Solis declinationis maximæ Æ C, grad. 23. m. 30. Sinum 19875. Ita primi gradus Tauri *m*, distantiae à proximo Æquinoctio Æ, grad. 30. Sinus 50000. Ad 19937. Sinum declinationis quæsitæ principij Tauri, quæ est Arcus L M, grad. 11. m. 30.

Vel per Logarithmos, more solito iungantur

Logarith. distantie à proximo Æquinoctio grad. 30. ——— 969897

Et Logarith. maximæ Solis declinationis grad. 23. m. 30. ——— 960070

Colligetur Logarith. declinationis quæsitæ grad. 11. m. 30. ——— 929967

- 3 Traditur autem hæc regula exercitationis gratia, & pro illis, qui declinationes cupiunt ad singula scrupula; cæterum declinationes omnium Signorum Zodiaci, ad singulos gradus habentur *Primæ Partis lib. 2. cap. 6. prax. 1. in Tabula*; de cuius compositione videatur *Synopsis Astronomica lib. 1. tract. 4. sect. 1. Problem. 4.*

Praxis II. Altitudinem Poli exquirere ex Vmbris Meridianis.

- 1 **I**N Diagrammate appposito Q H A O P, sit Circulus Meridianus. H O, Horizon. P A, Planum quoduis Horizontale. P V, Planum Verticalis. T, Centrum Mundi. Q, Corpus Solis. T E, Gnomon Verticalis; T F, Horizontalis.

- 2 Umbra est duplex; *Recta*, & *Versa*.

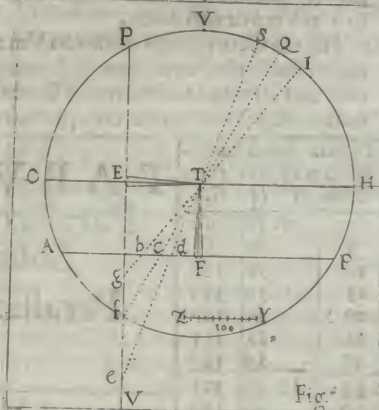
Umbra *Recta* est illa, quæ proijcitur in Planum Horizontalem, P A, à Gnomone T F, super illud perpendiculariter erecto. Cuiusmodi sunt F d, F e, F b.

Vm-

Vmbra Versa est illa, quæ projicitur in planum Verticale PV, à Gnomone TE, Horizonti parallela. Veluti, Eg, Ef, Ee.

Vtraque est triplex, iuxta Solis triplicem Altitudinem; nempe centri Q, limbi supremi S, & limbi infimi I.

3 Gnomon vterque supponitur divisus in partes quotcumque determinatas decem, aut centum, aut mille, vt YZ. Deinde Meridiei momento (per prax. 1. aut 2. cap. 4. lib. 2. primæ Partis,) accipiat eundem Gnomonis vmbra, & observetur diligenter, quot partes contineat ex illis, quarum Gnomon est 10. aut 100. &c.



4 His peractis, si data longitudine Vmbre Rectæ, *exempli causa*, Fd, partium 32. quarum Gnomon FT, est partium 100. si queratur Altitudo apparens supremi limbi Solis S; fiat.

Vt Gnomon FT, P. 100. Ad Vmbra Rectam Fd, par. 32. Ita Radius FT, 100000. Ad Tangentem 32000. Anguli FTd, distantia à Vertice V, grad. 17. m. 44. cuius complementum ad grad. 90. est angulus TdF, Altitudinis apparentis supremi limbi Solis, S; nempe grad. 72. m. 16.

5 Si autem è conuerso data Altitudine apparente supremi limbi Solis, & quantitate Gnomonis, queritur vmbra Recta, Fiat; Vt Radius FT, 100000. Ad Tangentem Fd, anguli FTd, 32000. Ita Gnomon FT, 100. Ad Vmbra rectam Fd, P. 32.

6 Si data quantitate Vmbre Versæ, & Gnomonis inquiritur apparens Altitudo infimi Solis limbi I; Fiat, vt Gnomon TE; Ad Vmbra E g. Ita Radius TE; Ad Eg, Tangentem anguli ETg, mensurantis apparentem Altitudinem limbi I.

Vel Logarithmo Vmbre Versæ, adde Logarithmum secundum Gnomonis TE, & fiet Mesologarith. Anguli ETg.

7 Et è conuerso data Altitudine apparente limbi infimi Solis, & Gnomonis quantitate, inuestigatur Vmbra Versa, si fiat Vt Radius; Ad Gnomonem; Ita Anguli ETg, Tangens; Ad Vmbra Versam Eg. Vel Logarithmo Gnomonis adde Mesologarithmum Anguli ETg, & fiet Logarithmus Vmbre Versæ.

8 Altitudo visa Solaris marginis, seu limbi convertitur in Altitudinem visam centri Solis, si apparens Solis Semidiameter additur limbi infimi, vel subtrahitur limbi supremi Altitudini visæ.

9 Tum adde Altitudini visæ centri Solis paralixim tali Altitudini con-

gruentem, & aggregato ex ijs, subtrahe suam Refractionem: supererit Altitudo Vera centri Solis.

10 Habita Centri Solis Altitudo Vera, ei detrahe Declinationem temporaneam Solis, id est eam, quæ Soli conuenit eodem Meridie, quo Umbra obseruata fuit, si talis Declinatio est Borealis; adde si Australis, & habebis Altitudinem Æquatoris, cuius complementum erit Altitudo Poli quasita.

Tabula Semidiametrorum apparentium Solis. I II G.

0	15. 30	560
5	30	355
10	30	350
15	31	345
20	32	340
25	33	335
30	34	330
35	15. 35	325
40	36	320
45	37	315
50	38	310
55	39	305
60	40	300
65	15. 41	295
70	42	290
75	43	285
80	44	280
85	45	275
90	46	270
95	15. 47	265
100	48	260
105	49	255
110	50	250
115	51	245
120	52	240
125	15. 53	235
130	54	230
135	55	225
140	56	220
145	57	215
150	58	210
155	15. 58	205
160	59	200
165	16. 0	195
170	1	190
175	2	185
180	2	180

Anomalia

Anoma.

T A B V L A Parallaxium Solis. Parallaxis.

Alti- tudo. Gr.	Sol in Apo- geo. II III	Sol in Media distan- tia. II III	Sol in Peri- geo. II III
0	27. 28	28. 18	29. 8
5	25. 10	26. 10	27. 10
10	23. 20	24. 20	25. 20
15	21. 30	22. 30	23. 30
20	19. 40	20. 40	21. 30
25	17. 50	18. 50	19. 40
30	16. 0	17. 0	17. 50
35	14. 40	15. 30	16. 0
40	12. 30	13. 10	13. 30
45	11. 0	11. 20	11. 40
50	9. 30	9. 40	10. 0
55	7. 40	7. 50	8. 20
60	6. 0	6. 10	7. 0
65	5. 0	5. 10	6. 0
70	4. 0	4. 10	4. 30
75	3. 0	3. 8	3. 20
80	2. 0	2. 4	2. 10
85	1. 0	1. 2	1. 6
90	0. 0	0. 0	0. 0

I. II III IV V. VI
XI. XII IX. X VII. IIX
Anomalix signa.

T A B V L A Refractionum Solis.

Alti- tudo Ap- par. Gr.	Æsti- ua. I II	Æqui- noctia- lis. I II	Hyber- na. I II
0	30. 0	31. 0	32. 0
1	22. 0	23. 0	24. 0
2	16. 0	17. 0	18. 0
3	13. 0	14. 0	15. 0
4	11. 32	12. 31	13. 30
5	10. 32	11. 31	12. 30
6	9. 35	10. 31	11. 53
7	8. 59	9. 53	11. 12
8	7. 25	8. 17	9. 34
9	6. 43	7. 33	8. 48
10	6. 15	7. 3	8. 14
11	5. 48	6. 34	7. 44
12	5. 20	6. 4	7. 12
13	4. 53	5. 35	6. 41
14	4. 26	5. 6	6. 9
15	3. 58	4. 36	5. 36
16	3. 32	4. 7	5. 4
17	3. 7	3. 38	4. 32
18	2. 26	2. 54	3. 43
19	1. 47	2. 10	2. 55
20	1. 0	1. 40	2. 21
21	0. 33	1. 11	1. 49
22	0. 14	0. 42	1. 10
23	0. 6	0. 24	0. 52
24	0. 0	0. 5	0. 30
25	0. 0	0. 0	0. 10
26	0. 0	0. 0	0. 5

Ricciol. Astron. tom. 2. Tab. 37. 39. & 40.

Exem-

Exemplum sit illud Bononiæ, quod affert P. Ricciolus *Geograph. lib. 7. cap. 5. num. 16.* his verbis. Anno 1665. Iulij 23. D. Io: Dominicus Cassinus in Magno S. Petronij Gnomone observavit umbram P. 45098. qualium Gnomon est 100000. Quare ipsa umbra fuit tangens anguli graduum 24. m. 16. sec. 19. Id est distantia vise limbi supremi Solis à Vertice: quare eius Altitudo visa fuit grad. 65. m. 43. sec. 41. Cui si demas Semidiametrum Solis apparentem m. 15. sec. 34. Et addas parallaxim nostram sec. 5. Evadit Vera Altitudo centri Solis grad. 65. m. 28. sec. 12. Deme his declinationem nostram Boream quæ tunc fuit grad. 19. m. 58. sec. 18. Et restat Altitudo Poli grad. 44. m. 30. sec. 6. seu potius (Tyronum gratia) restat grad. 45. m. 29. sec. 54 cuius proinde complementum grad. 44. m. 30. sec. 6. Est Altitudo Poli Bononiensis quæ sita.

11 Nota. Si Umbra Meridiana observatio facta sit Æquinoctij die; & Æquinoctium fiat in Meridie; Altitudo vise supremi limbi Solis, conuerfa in Veram centri Solis, dabit veram Altitudinem Æquatoris; & subtracta gradibus 90. habebis Altitudinem Poli. At quot horis, & minutijs fiet Æquinoctium Vernum ante Meridiem, vel Autumnale post Meridiem, totidem minuta, & secunda deme Altitudini centri Solis; Contra verò, quot horis, minutisque præcesserit Autumnale, aut successerit Vernum Æquinoctium, totidem minuta, & secunda adde Altitudini centri Solis, & habebis complementum Altitudinis Poli.

12 Si autem observatio Umbra Meridiana sit habita die Solstitiali, Altitudinem supremi limbi Solis, reduc in centri Solis visam, ac tandem Veram, cui subtrahe declinationem Solis maximam, si Solstitium Æstivum est; adde si Brumale; nam si fiat in ipso Meridie, habebis altitudinem Æquatoris, & hac dempta gradibus 90. Altitudinem Poli, quæ non discrepabit à Vera, plusquam 14. secundis, si Solstitium intra illum diem, quo fuit observata Umbra factum fuerit. Quot autem binarijs horarum Meridiem antecefferit, vel successerit Brumale, totidem secunda adde Altitudini Poli, prius reperta; vel subtrahe si Æstivum successit, aut anteceffit.

13 Aliter etiam inueniri potest Altitudo Poli, ex Altitudine Solis Meridiana, ut habetur *Primæ Partis lib. 2. cap. 6. prax. 1. & cap. 11. prax. 4.*

Praxis III. Datis elevatione Poli, & cuiuslibet puncti Cælestis declinatione, indagare Differentiam Ascensionalem, Arcum Semidiurnum, ac Seminocturnum; Et declinationem eiusdem.

1 **F**iat, Ut Radius, Ad Tangentem elevationis Poli; Ita Tangens Declinationis, Ad Sinum differentia Ascensionalis.

Exemplum. Queratur differentia Ascensionalis principij Cancræ, sub Elevatione Poli grad. 45. Fiet, Ut Radius 100000. Ad 100000. Tangentem Altitudinis Poli grad. 45. Ita 43481. Tangens declinationis principij Cancræ grad. 23. m. 30. Ad 43481. Sinum differentia Ascensionalis grad. 25. m. 46.

Ta-

erit Al-
mpora-
a obser-
Altitu-

L A
m

Hyber-
na.

1 11

32. 0

24. 0

18. 0

15. 0

13. 30

12. 30

11. 53

11. 12

9. 34

8. 48

8. 14

7. 44

7. 12

6. 41

6. 9

5. 36

5. 4

4. 32

3. 43

2. 55

2. 21

1. 49

1. 10

0. 52

0. 30

0. 10

0. 5

Exem-

Tabula Arcuum Semidiurnorum pro Tropicis Cancrī, & Capricorni, ad singulos gradus omnium eleuationum Poli. Qui eam cum minutis cupit, traditam supputandi Methodum adhibeat.

Altitudi. Poli.	Arcus Semidiurnus Capricorni.		Arctis, & Libræ	Arcus Semidiurnus Cancrī.		Altitudi. Poli.	Arcus Semidiurnus Capricorni.		Arctis, & Libræ	Arcus Semidiurnus Cancrī.		Quantitas graduum, quibus Sol in regionibus ultra Circulum Arcticum, & Antarcticum in occiduus perpetuo lu- cet; pro quibus singulis dies vna circiter computari potest, vt gradus 40. sint quadraginta dies.	
Gr.	Gr.	M.		Gr.	M.	Gr.	Gr.	M.		Gr.	M.		
0	90.	0		90.	0	34	72.	57		107.	3		
1	89.	34		90.	26	35	72.	16		107.	44		
2	89.	8		90.	52	36	71.	35		108.	25		
3	88.	42		91.	18	37	70.	53		109.	7		
4	88.	16		91.	44	38	70.	8		109.	52		
5	87.	49		92.	11	39	69.	23		110.	37		
6	87.	23		92.	37	40	68.	36		111.	24		
7	86.	57		93.	3	41	67.	47		112.	13		
8	86.	30		93.	30	42	66.	57		113.	3		
9	86.	3		93.	57	43	66.	5		113.	55		
10	85.	36		94.	24	44	65.	10		114.	50		
11	85.	9		94.	51	45	64.	14		115.	46		
12	84.	42		95.	18	46	63.	14		116.	46		
13	84.	14		95.	46	47	62.	12		117.	48		
14	83.	46		96.	14	48	61.	8		118.	52		
15	83.	18		96.	41	49	60.	0		120.	0		
16	82.	50		97.	10	50	58.	45		121.	15		
17	82.	22		97.	38	51	57.	30		122.	30		
18	81.	53		98.	7	52	56.	11		123.	49		
19	81.	24		98.	36	53	54.	45		125.	15		
20	80.	54		99.	6	54	53.	14		126.	46		
21	80.	24		99.	36	55	51.	38		128.	22		
22	79.	53		100.	7	56	49.	53		130.	7		
23	79.	22		100.	38	57	47.	58		132.	2		
24	78.	50		101.	10	58	45.	54		134.	6		
25	78.	18		101.	42	59	43.	40		136.	20		
26	77.	45		102.	15	60	41.	8		138.	52		
27	77.	12		102.	48	61	38.	20		141.	40		
28	76.	38		103.	22	62	35.	12		144.	48		
29	76.	3		103.	57	63	31.	25		148.	35		
30	75.	27		104.	33	64	26.	57		153.	3		
31	74.	51		105.	9	65	21.	11		158.	49		
32	74.	14		105.	46	66	12.	25		167.	35		
33	73.	36		106.	24	67	22.	52					
												Gradus Polares.	
												Grad. Min.	
												67	22. 52
												68	40. 0
												69	52. 0
												70	61. 26
												71	70. 26
												72	78. 22
												73	84. 56
												74	92. 12
												75	99. 0
												76	105. 16
												77	111. 20
												78	117. 6
												79	122. 46
												80	128. 22
												81	133. 50
												82	139. 6
												83	144. 22
												84	149. 36
												85	154. 42
												86	159. 50
												87	164. 52
												88	169. 58
												89	174. 58
												90	180. 0

vel

Vel Mesologarithmo Altitudine Poli grad. 45. ————— 1000000

Adde Mesologarithmum declinat. datæ grad. 23. m. 30. ————— 963830

Colliges (dempta unitate in principio) Logarith. grad. 25. m. 46. ————— 963830

2 Tū si declinatio dati puncti Cœlestis est Borealis, vt in præsentī, differentiam Ascensionalem adde gradibus 90. & si declinatio est Australis, subtrahe; nam summa, vel differentia erit arcus Semidiurnus quæsitus, eiusque residuum, seu complementum ad grad. 180. erit Arcus Seminocturnus. Veluti in allato exemplo, differentia Ascensionali grad. 25. m. 46. addita gradibus 90. fiunt gradus 115. m. 46. pro Arcu Semidiurno principij Canceri sub Altitudine Poli grad. 45. quo arcu subtracto gradibus 180. relinquitur arcus Seminocturnus grad. 64. m. 14. pro diurno principij Capricorni. Et sic in reliquis.

3 Declinatio cuiuslibet arcus, quocumque horarum inuenietur, si fiat, Vt Sinus Totus, Ad Sinum differentie, inter arcum Semidiurnum datum, & quadrantem grad. 90. Ita Tangens complementi Altitudinis Poli; Ad declinationem quæsitam. De quo videatur num. 13. prax. 5. cap. 6. lib. 2. prima part.

Methodus inueniendi arcus perpetua lucis, & umbræ; siue perpetua diei, ac noctis ad quamcumque propositam latitudinem Poli maiorem grad. 66. m. 30.

4 Vbi Altitudo Poli maior est gradibus 66. m. 30. Arcus diurnus circulum integrum grad. 360. siue horas 24. excedit. Ita, vt sub altitudine Poli grad. 90. sex menses perpetua dies eluceat; totidemque nox tenebris torpescat obscuris. Huiusce autem rei illud in causa est, quod signa Zodiaci sex ibidem supra Horizontem integra eleuentur, sexque infra depressa iaceant.

Quæritur itaque proposita latitudine Poli, *exempli causa* grad. 75. quinam sint gradus, qui nunquam occidant, & qui nunquam orientur.

Respondeo, illos omnes gradus Eclipticæ, qui declinationem habent maiorem complemento datæ altitudinis Poli, nimirum grad. 15.

Quoniam autem in Tabella declinationum, quæ habetur in *prima part. lib. 2. cap. 6. prax. 1.* non est ad vnguem talis declinatio grad. 15. accipienda est

proximè minor grad. 14. m. 51. cui in latere dextro respondet gradus decimus Tauri, & in sinistro gradus vigesimus Leonis; tanquam duo extrema arcus Zodiaci, in quo Sol existens diem efficit perpetuum; scilicet gradus viginti postremos Tauri, totum geminorum, & Canceri Signum, ac 20. priores gradus Leonis percurrens; qui omnes simul, gradus centum existunt, diemque trimestrem cum diebus decem circiter conficiunt: quo Sol hac in Regione nunquam occidit; sicut è contra in oppositis gradibus Signorum Scorpionis, Sagittarij, Capricorni, & Aquarij nunquam oritur.

Quod si calculo exactiori operari libeat, cum non inuenitur ad vnguem declinatio quæsitæ, vt in præsentī exemplo, accipienda erit pars proportio-

nalis,

Capri-
ri eam
ibeat.

aduum,
gionibus
Arcti-
ticum in
tuò lu-
singulis
compu-
adus 40.
dies.

d. Min.

2.	52
0.	0
1.	0
1.	26
0.	26
3.	22
3.	56
2.	12
7.	0
5.	16
1.	20
7.	6
1.	46
3.	22
3.	50
0.	6
4.	22
9.	36
4.	42
9.	50
4.	52
9.	58
4.	58
0.	0

Vel

nalis, more solito Astronomico; ita, vt primus terminus regula aurea sit differentia inter declinationem proximè minorem grad. 14. m. 51. & proximè maiorem grad. 15. m. 10. Secundus minuta 60. Tertius differentia inter declinationem proximè minorem grad. 14. m. 51. & declinationem quæfitam grad. 20. sic.

Vt prima differentia m. 19. Ad m. 60. Ita Secunda differentia m. 9. Ad m. 28. Cuius duplum minuta scilicet 56. subtrahe à summa grad. 100. & relinquatur spatium permanentiæ Solis supra datum Horizontem grad. 99. m. 4. siue rotundè, velut in apposita hic Tabella grad. 99.

Praxis IV. Data Declinatione Solis, & Altitudine Aequatoris, Altitudinem Meridianam Solis quouis tempore inuenire.

Alitudini Aequatoris (quæ semper est complementum Altitudinis Poli) declinationem Solis Borealem adde; Australem subtrahe, & habebis Altitudinem centri Solis Meridianam; velut in exemplo sequentis praxeos.

Praxis V. Data vtraque Altitudine Meridiana (per præcedentem praxim) indagare Altitudinem Solis, in Circulo horæ sextæ Astro-nomicæ, constituti.

Quæritur, *exempli causa*, Altitudo Solis, dum grad. 90. abest à Meridiano in principio Cancræ constitutus; sub Altitudine Poli grad. 45. Primum (*ex præcedenti praxi*) inquire Solis Altitudinem Meridianam in principio Cancræ, & in opposito parallelo Capricorni; sic.

CALCVLI FORMÆ. I G. M. I Sinus

Altitudini Aequatoris	145. 0	I
Adde Solis declinationem in principio Cancræ	23. 30	I
Habes Altitudinem Solis Meridianam princip. Cancræ	168. 30	I 93042
Subtrahe gr. eodè 23. m. 30. Habes Alt. in princ. Capric. 121. 30	I	36650
3 Tum collige vtriusque Altitud. Sinum. fit Bissinus	I	I 129692
Cuius medietas vocatur Altitud. maior Generalis	I	I 64846
Hanc subtrahe Sinui Alt. Cancræ, relinquitur Sinus	16. 23	I 28196
Altitudinis Solis existentis in Circulo horæ sextæ Astro-nomicæ.	I	I

Idem Aliter.

Fiat, Vt Radius 10000. Ad 70711. Sinum eleuationis Poli grad. 45. Ita 39875. Sinus declinationis dati paralleli Cancræ gr. 23. m. 30. Ad 28196.

Si-

Sinum Altitudinis Solis, existentis in Circulo horæ sextæ Astronomicæ gr. 16. m. 23, quæ etiam Altitudo minor Generalis appellatur.

Monitum pro Methodo precedenti.

SI aggregatum ex Altitudine Æquatoris, & Solis declinatione superat grad. 90. accipiendus est aggregati eiusdem Sinus Complementi ad gradus 180. & reliqua peragenda, vt prius.

Praxis VI. Altitudinem Solis in Verticali Primario, constitui, indagare.

QUæatur prædicta Altitudo Solis existentis in principio Cancræ, cuius declinatio est grad. 23. m. 30. sub Altitudine Poli grad. 45.

Fiat, Vt Sinus Altitudinis Poli; Ad Sinum declinationis Solis: Ita Radius ad Sinum Altitudinis Verticalis.

Vel Logarithmo declinationis Solis grad. 23. m. 30. ————— 960070

Adde Tomologarithmum Altitudinis Poli grad. 45. ————— 15051

Colliges Logarith. Altit. Solis in Vertical. primario grad. 34. m. 20. 975121

Praxis VII. Angulos horarios, siue distantias horarum Astronomicarum, seu à Meridie, & Medianotte: Ab Ortus, & ab Occasu: & horarum inæqualium assignare pro Horologijs Horizontalibus, & Verticalibus directis.

HIS suppositis, quæ diximus lib. 1. Epifagoge 3. cap. 3. primæ partis, de horis, & circulis horarijs; Angulus horarius, est Angulus ille, quem circulus quinis horarijs facit cum Meridiano: cuiusque metitur Æquatoris arcus, inter Meridianum, & quemcumque circulum horarium interceptus. Vt in schemate *praxis primæ huius capitis*, in quo circulus B L A, est circulus horæ vndecimæ Matutinæ, aut primæ Vespertinæ Astronomicæ; & circulus V H N O, Meridianus; Angulus horarius, siue distantia horarum prædictarum, est Angulus L B Æ, quem metitur arcus Æquatoris Æ L, graduum 15. Ratio est, quia ex dictis loco modò citato, singuli horarum æqualium circuli (de quorum numero est etiam Meridianus) distant ab inuicem quindenos Æquatoris gradus.

Distantia, siue anguli horarum Astronomicarum.

HINC horarum Astronomicarum distantia habentur ducendo horas singulas Pomeridianas, 1. 2. 3. 4. &c. in 15. Æquidistant autem à Meridiano prima Pomeridiana, & vndecima Antemeridiana; secunda Pomeridiana, & decima Antemeridiana, &c. sicut etiam æquidistantes ab hora sexta eandem habent distantiam, vt patet in Tabella.

B

3 Ob-

aureæ sit
& proxi-
mitia inter
in quæsi-

Ad m.
& relin-
99. m. 4

dinem

dinis Po-
ne, & ha-
equentis

im)

Meridia-
l. 45.
Meridia-

Sinus

93042

36650

129692

64846

28196

ad. 45. Ita
Ad 28196.

Si-

3 Obseruandum est autem nullam distantiam arcum Semidiurnum Cancrī ad latitudinem Poli datam excedere. Deinde easdem Capricorno etiam deferuire. Et pro Æquinoctiali retinendas tantum illas, quæ gradus 90. non superauerint. Ac tandem huiusmodi Astro-nomicarum horarum distantias, esse Vni-uerfales, & cuius Horizonti accommoda-tas.

*Distantia horarum ab Ortū, &
ab Occasu.*

Hora ante Me- ridiem.	Hora post Me- ridiem.	Distantia Solis à Me- ridiano.	
Hore 1		Hore 1	Gra. Min.
11	1	12	0.
10	2	15.	0.
9	3	30.	0.
8	4	45.	0.
7	5	60.	0.
6	6	75.	0.
5	7	90.	0.
4	8	75.	0.
		60.	0.

4 Arcus Semidiurnus cu-
iuscumque dati paralle-
li Solis (exempli causa principij
Cancrī, sub altitudine Poli gr.
45. qui, ex praxi 3. huius capitis,
patet esse grad. 115. m. 46.) sem-
per est angulus, siue distantia
horæ 24. Cui subtractis gradi-
bus 15. relinquitur distantia,
horæ 23. grad. 100. m. 46. &
hunc rursus gradibus 15. sub-
ductis, remanent grad. 85. m.
46. distantia horæ 22. Et sic de-
inceps, donec subtractio 15.
graduum fieri non possit. Ac
tūm vltima distantia inuenta,
grad. 10. m. 46. quæ est horæ
17. immediatè sequentis post
Meridiem ex gradibus 15. dem-
pta relinquet distantiam grad.
4. m. 14. pro hora 16. imme-
diatè antecedenti Meridiem;
cui si addantur 15. gradus, ha-
bebitur distantia horæ 15. Et sic
de cæteris, quousque aggrega-
tum ex vltima distantia, & gra-
dibus 15. non excedat arcum diurnum propositi paralleli Cancrī (in præsen-
ti exemplo) grad. 115. m. 46. Vt in Tabella.

Tabula distantiarum horaria- rum à Meridiano in princi- pio Cancrī, sub Altitudine Poli grad. 45.				Hore Ca- pricorni respon- dentes horis in Cancro.	
Gra. Mi.	Hore ab Occasu.	Arc. diu. Minue.	Hore Ba- bylonica.		
115. 46				12	
15.					
100. 46	23		1	13	
85. 46	22		2	14	
70. 46	21		3	15	
55. 46	20		4	16	
40. 46	19		5	17	
25. 46	18		6	18	
10. 46	17		7	19	
15. 0					
10. 46		Minue			
4. 14	16		8	20	
19. 14	15		9	21	
34. 14	14		10	22	
49. 14	13		11	23	
64. 14	12		12	24	
79. 14	11		13	25	
94. 14	10		14	26	
109. 14	9		15	27	

5 Idem

5 Idem porrò sunt anguli, siue distantia, & Altitudines horarum ab Occasu, & ab Ortus, quæ in opposito parallelo simul numerum 24. conficiunt, & contrà. Ita hora 14. ab Occasu, in Cancro, & hora 10. ab Ortus, in Capricorno; necnon hora 10. ab Occasu in Capricorno, & hora 14. ab Ortus, in Cancro, eandem habent distantiam à Meridiano, & eandem Altitudinem super Horizonte.

6 Pro horis Æquinoctialis, distantia horæ 24. erit gradus 90. distantia horæ 23. grad. 75. hoc est semper gradibus 15. minus, ad horam 18. usque, cuius distantia est 0. atque istæ valent etiam pro Antemeridianis; ut patebit infra.

Distantia horarum inæqualium.

7 Arcum Semidiurnum dati paralleli, diuide per 6. vel Arcum diurnum per 12. & quotus erit distantia horæ 5. & 7. à Meridiano. Eadem duplata fiet distantia quartæ, & octauæ; & sic in cæteris.

Exemplum. Sole in principio Cancræ constituto, Arcus Semidiurnus, est grad. 115. m. 46. quo in sex partes diuiso; vel Arcu integro grad. 231. m. 30. in 12. partes distributo, quotus grad. 19. m. 18. rotundè, erit distantia horæ 5. & 7. idem duplatus fit gradus 38. m. 36. distantias horarum 4. & 8. &c. ut hora 12. sit Arcus Semidiurnus integer.

Eodem modo etiam operabimur circa arcum Semidiurnum Capricorni. Et pro Æquinoctiali distinguuntur horarum distantia, prout in Astronomicis.

Praxis VIII. Datis Solis Altitudine maiori generali, & eiusdem Altitudine in circulo hora sextæ Astronomicæ ex quinta praxi; ac distantia horaria à Meridiano, per VII. praxin, Altitudinem Solis supra Horizontem, quacumque hora data, exquirere.

1 IN Diagrammate apposito (in quo omnia se habeant, ut supra in prima praxi) consideretur triangulus V B M, cuius nota sunt duo latera, V B, & M B, & angulus ab illis comprehensus, V B M.

2 Latus V B, semper est distantia Verticis à Polo, siue Altitudo Æquatoris, quæ perpetuò est complementum altitudinis Poli ad grad. 90.

Tabella distantiarum horarum Inæqualium à Meridie.

Hora Antemeridia.	Hora Pomeridianæ.	Distantia Cancræ.	Distantia Capricorni.
		Grad. M.	Grad. M.
6		0. 0	0. 0
5	7	19. 18	10. 42
4	8	38. 36	21. 24
3	9	57. 54	32. 6
2	10	77. 12	42. 48
1	11	96. 29	53. 31
12		115. 46	64. 14

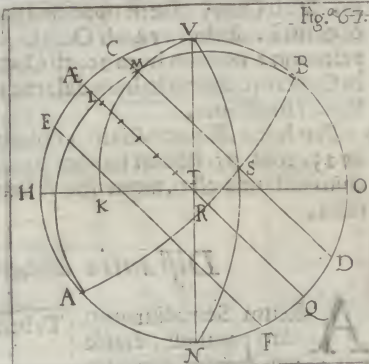
B 2 3 La.

3 Latus MB, semper est complementum declinationis maximæ Solis grad. 66. m. 30.

4 Angulus VBM, comprehensus ab illis, est semper distantia horæ datæ à Meridiano, quam metitur arcus Æquatoris, interceptus inter Meridianum, & Circulum horæ propositæ, ut in præsentî, arcus ÆL.

5 Circa latera tres sunt casus. *Primus*. Quando simul sumpta quadrante, scilicet grad. 90. exæquât. *Secundus*, quando coniunctim sunt quadrante minora. *Tertius*, cum simul sunt quadrante Maiora.

6 Circa angulum sunt duo casus. Est enim, vel acutus, vel obtusus. Si est acutus, in regula aurea accipitur Sinus, vel Logarithmus eius complementi; Si est obtusus, sumitur Sinus, vel Logarithmus excessus eiusdem supra quadrante grad. 90.



Solutio primi casus lineariter, & logarithmicè.

7 **E**xemplum. Queratur Altitudo Solis in Cancro horæ 2. vel 10. sub Altitudinem Poli grad. 66. m. 30. Triangulus VBM, ita se habet.

Crus maius, MB, ut in reliquis omnibus est grad. 65. m. 30. nempe complementum declinationis Solis existentis in principio Cancrî.

Crus minus VB, est grad. 23. m. 30. complementum scilicet Altitudinis Poli, quod semper est altitudo Æquatoris, & distantia Poli à Vertice.

Angulus VBM, horæ 2. vel 10. Astronomica est grad. 30. ut patet supra in Tabula praxis 7. num. 2.

8 His datis complementum basis VM, nempe MK, quod semper est Altitudo Solis quæsitæ, sic inuenies.

1 Accipe duplum Cruris minoris dati gr. 47. vel Crus minus iungatur complemento Maioris, & fiet similiter grad. 47.

2 Huius dupli accipiat Sinus, qui erit *Inuentum primum* ————— 73135
Altitudo Solis Meridiana Borealis.

3 Huius Sinus Semissis, sit *Inuentum secundum* ————— 36568

4 Horum Sinuum Differentia sit *Inuentum tertium* ————— 36567
Altitudo horæ sextæ Astronomica.

5 Complementum anguli dist. hor. grad. 30. Sin. *Inuentum quartum*. 86602

6 Tūc fiat. Ut Radius 100000. Ad *Inuentum secundum* 36568. Ita *Inuentum quartum* 86602. ad *quintum* 31678. cui adde *Inuentum tertium* 36568. colliges *Inuentum sextum & ultimum* 68246. cui respondeat grad. 43. m. 2. Altitudo Solis quæsitæ.

Sin

Sin autem subtrahes idem *Inuentum quintum* ab eodem *Inuento tertio*, colliges aliud *Inuentum* 4890. cui respondent grad. 2. m. 48. pro Solis depressione infra Horizontem in principio Capricorni, eadem hora data.

Logarithmicè.

⁹ Logarithmo Inuenti secundi generali	656311
Iungatur Logarithmus secundus angul. horarum grad. 30.	963753
Colliges Logarithmum	950064
Cui responder Sinus, qui est <i>Inuentum quintum</i>	31675
Addendus, & subtrahendus <i>Inuento tertio</i> , vt priùs	36568
Colligitur Sinus grad. 43. m. 2. pro Altitudine Solis horæ datæ	68243
Relinquitur grad. 2. m. 48. Altitud. respondentis horæ	4893

Nota circa angulum acutum, vel obtusum.

¹⁰ Quando angulus horarius datus existit acutus, vt in allato exemplo, *Inuentum quintum* addendum est *tertio*, & aggregatum erit Sinus Altitudinis Solis quæsitæ; Differentia verò illorum, erit Sinus Altitudinis Solis respondentis horæ in opposito parallelo.

¹¹ Quando angulus est obtusus, idest quadrante maior, conferes idem *Inuentum quintum* cum *Inuento tertio*. Et si *Inuentum quintum* fuerit maius *Inuento tertio*, eorum differentia erit Sinus Altitudinis Solis respondentis horæ in opposito parallelo; aggregatum verò, Sinus Altitudinis horæ quæsitæ. Sinus *Inuento tertio*, differentia illorum dabit Sinum Altitudinis quæsitæ; & aggregatum erit Sinus Altitudinis horæ respondentis in opposito parallelo.

¹² *Exemplum.* Queratur Altitudo Solis existentis in principio Cancræ hora 7. à Media nocte, & 5. à Meridie, cuius angulus horarius, siue distantia à Meridiano est grad. 105.

Logarithmo Generali, <i>Inuenti secundi</i>	956311
Iungatur Logarithmus excessus singuli grad. 15.	941300
Colligitur Logarithmus	897611

Huius Sinus 9469. quod est *Inuentum quintum*, minus *Inuento tertio* 36568. ei subtrahatur, relinquitur Sinus 27.99. cui respondent grad. 15. m. 43. Altitudo Solis quæsitæ; eidem additus, tribuit Sinum 46037. cui respondent gradus 27. m. 25. Altitudo Solis horæ respondentis in opposito parallelo.

Secundus casus præceptio. Quando scilicet latera trianguli V B M, coniunctim sunt quadrante minora:

¹ Complementum Cruris maioris, hoc est declinatio Solis maxima grad. 23. m. 30. adde Cruri minori, quod semper est complementum Altitudi-

tudi-

rudinis Poli, seu (quod in idem recidit) Altitudo Æquatoris, aut distantia Poli à Vertice, & aggregati Sinus erit *Inuentum primum*, seu Altitudo Solis Meridiana.

2 Crus minus auferatur à complemento maioris (hic enim semper Crus minus cedit complemento maioris) quare residui istius sinus, auferendus ab *Inuento primo*, atque huius residui semissis erit *Inuentum secundum*.

3 Hoc *Inuentum secundum* subtrahe ab *Inuento primo*, & reliquus dabit *Inuentum tertium*.

4 Sinus Complementi Anguli dati, quando datur acutus: vel excessus eiusdem supra circuli quadrantem, si detur obtusus, dabit *Inuentum quartum*.

5 Tum, fiat, Vt Radius, Ad *Inuentum secundum*; Ita *Inuentum quartum*, ad *Inuentum quintum*.

6 Si datus angulus existit acutus, tunc aggregatum *Inuenti quinti*, atque *Inuenti tertij*, erit sinus Altitudinis Solis quæsita.

Sin autem angulus datus existit obtusus, tunc Sinus altitudinis Solis erit differentia *Inuenti tertij*, & *quinti*, si quando *Inuentum quintum* cedat, fueritque minus *Inuento tertio*: contra, si præstet, fueritque *Inuentum quintum* maius *Inuento tertio*; tunc enim eorum differentia dabit sinum altitudinis Solis quæsita.

Exemplum, per Sinus.

14 **Q**Varatur altitudo Solis existentis in principio Cancrì hora 3. vel 9. Astronomica sub altitudine Poli grad. 72. in quo quidem exemplo Crus maius est complementum declinationis Solis maximæ MB: Crus minus distantia Poli à Vertice VB, seu altitudo Æquatoris ÆH, grad. 18. Vnde calculus tum generalis, tum specialis pro altitudine Solis horæ datæ 3. vel 9. ita disponitur.

C A L C V L V S.		I G. M. I Sinus
Declinatio Solis maxima MB.	[23. 30]	
Altitudo Æquatoris ÆH.	[18. 0]	
Aggregatum, cuius Sinus est <i>Inuent. I.</i>	[41. 30]	66262
Differentia, cuius sin. auferend. ab <i>Inuent. I.</i>	[5. 30]	9585
Sinum differentia.	[]	56677
Huius differentia semissis. <i>Inuent. II.</i>	[]	28339
Hoc <i>Inuent. II.</i> sublato à <i>I.</i> relinquitur <i>III.</i> Alt. hor. 6.	[22. 17]	37923
quod <i>Inuentum tertium</i> semper est Sinus altitudinis horæ sextæ Astronomicae.		
Anguli horæ 3. vel 9. Astronomicae complementum est grad. 45. eiusque Sinus est <i>Inuentum IV.</i> grad. 45. m. o.		
Fiat igitur, Vt Radius 100000. Ad <i>Inuentum secundum</i> , 28339. Ita <i>Inuentum</i>		70711

tum quartum, 70711. Ad Inuentum quintum.	20038
Cui Inuento quinto, adde Inuentum tertium.	37923
Colliges sinum altitudinis quæsitæ grad. 35. m. 25.	57961

Idem exemplum Logarithmice.

L ogarithmo Inuenti secundi generali	945249
Augatur Logarith. 2. anguli horarij grad. 45.	984948
Colligitur Logarithmus	930197
Huic Logarithmo respondet Sinus	20051
Aggregandus Inuento tertio	37923
Et colligitur Sinus grad. 35. m. 25. Altitudinis quæsitæ, vt prius.	57974

16 Præceptio tertij casus, datis scilicet duobus Cruribus, coniunctim quadrante maioribus.

- 1 **C**omplementum Cruris maioris addatur minori, & aggregati Sinus erit Inuentum primum.
- 2 Idem Complementum, (quod semper hic minus) auferatur minori cruri, residuumque Sinus ad Inuentum primum addatur; & aggregati semissis dabit Inuentum secundum.
- 3 Inuentum secundum sublatum ab Inuento primo; Tertium relinquet.
- 4 Cætera eodem plane modo acquies, ac in antecedenti casu.

Exemplum, per Sinus.

- 17 **Q**uaratur altitudo Solis existentis in principio Cancræ hora 4. vel 8. Astronomica, sub altitudine Poli grad. 47.
- Latus MB, maius est similiter grad. 66. m. 30.
- Latus minus VB, distantia Poli à Vertice est grad. 43.
- Angulus horarius horæ 4. vel 8. est grad. 60.

C A L C U L U S.	I G. M. I Sinus
Altitudo Æquatoris, seu distantia Poli à Vertice	1 43. 0 1
Declinatio Solis maxima	1 23. 30 1
Aggregatum, cuius Sinus est Inuentum I.	1 66. 30 1 91706
Differentia	1 19. 30 1 33381
Sinuum aggregatum	1 1 125087
Huius aggregati semissis Inuentum II.	1 1 62543
Hoc substracto ab Inuento I. remanet III.	1 1 29163
Complementum ang. horar. 4. vel 8. grad. 60. Sinus IV. I 30. 0 1	50000
	Tum

Tum fiat, Vt Radius 100000. Ad Inuentum secundum	62543
Ita Inuentum quartum 50000. Ad Inuentum quintum	31271
Cui adde Inuentum tertium	29163
Colliges Sinum altitudinis quasita grad. 37. m. 11.	60434

Idem exemplum, Logarithmicè.

18 Logarithmo Inuenti secundi, generali	979621
Augatur Logarithmus secundus anguli horarij grad. 60.	969897
Colligitur Logarithmus	949518
Cui responder Sinus	31261
Addendus Inuento tertio	29163
Et colligitur vt prius Sinus grad. 37. m. 11.	60424
Aliter etiam altitudines Solis calculo exarare docuimus supra prima partis lib. 2. cap. 11. prax. 6 num. 13.	

19 Methodus indaganda Altitudinis Solis existentis in Æquatore.

Superior Methodus est quidem necessaria in supputandis altitudinibus Solis existentis in quouis parallelo extra Æquatorem; at si in Æquatore Sol diuerfetur, eius altitudo hac simplici manifestabitur Analogia.
Vt Radius, Ad Sinum altitudinis Æquatoris; Ita Sinus complementi anguli horarij, ad sinum altitudinis quasita.

Exemplum.

20 Varatur altitudo Solis in Æquatore existentis hora 4. vel 8. Astronomica sub altitudine Poli grad. 45.	
Fiet, Vt Radius 100000. Ad altitudinis Æquatoris grad. 45. Sinum	
70711. Ita complementi anguli horarij grad. 60. m. 0. Sinus 50000. ad	35355
Sinum grad. 20. m. 42. altitudinem Solis quasitam.	
Vel Logarithmicè.	
Logarithmo altitudinis Æquatoris grad. 45.	984048
Addatur Logarithmus secundus anguli horarij grad. 60.	969897
Colligitur Logarithmus altitudinis Solis grad. 20. m. 42.	954845

Exemplum generale.

21 Proponantur inuestiganda omnium horarum altitudines in vtroque parallelo Tropicorum Canceri, & Capricorni, & in Æquatore pro constructione Horologij Horizontalis sub altitudine Poli grad. 45.

Cal

Calculus Altitudinum Cancrī, & Capricornī.

²² IN hoc exemplo latus maius trianguli MBV, est MB, complementum scilicet maximæ declinationis Solis existentis in principio Cancrī grad. 66. m. 30. Crus minus VB, distantia Poli B, à Vertice V (quæ semper est æqualis altitudini Æquatoris HÆ,) est grad. 45. ac proinde ambo simul iuncta, quadrante sunt maiora, nempe grad. 111. m. 30. ideò procedendum est in calculo propositarum altitudinum, per tertium casum, sic.

CALCVLI FORMA.

I G. M. & Sinus

Crus minus, idest Altitud. Æquatoris	I 45. 0 I	
Complementum Cruris maioris	I 23. 30 I	
Aggregatum, cuius Sinus est Inuentum I.	I 68. 30 I	93042
Differentia	I 21. 30 I	36650
Sinuum aggregatum	I	I 129692
Huius aggregati semissis, Inuentum II.	I	I 64846
Idem ab Inuento I. sublatum, Inuentum III.	I	I 28196

²³ Nota primò. Iste calculus est generalis. Nam Inuentum secundum, & tertium, communia sunt omnibus altitudinibus Solis in datis parallelis supputandis; vt mox videbitur.

²⁴ Nota secundò. Quantitas angulorum distantiarum horariarum habetur ex praxi 7 huius libri. Vt in præsentī pro horis Italicis in tropicis, quarum altitudines quærimus, habentur in Tabula ibidem posita num. 4.

²⁵ Nota tertio. Distantiæ, siue anguli horarum Cancrī, deseruiunt etiam horis Capricornī, iuxta ordinem respondentiarum earum in quinta columna eiusdem Tabellæ. Distantia enim horæ 23. Cancrī, eadem est, ac distantia 13. Capricornī; Distantia horæ 22. Cancrī eadem, ac distantia horæ 14. Capricornī, &c. ex quo fit, vt eadem supputatione altitudinum Solis in Cancro, habeantur simul Altitudines paralleli oppositi Capricornī. Qua de re.

²⁶ Nota quarto. Si angulus horarius est quadrante maior, & pro calculo Inuenti quinti acceptus fuit Sinus, aut Logarithmus excessus, (iuxta præceptum 11. huius praxis;) Inuentum quintum subtrahere Inuento tertio, & habebis Sinum altitudinis Cancrī; adde, & conflabitur Sinus altitudinis respondentis horæ in opposito parallelo Capricornī. Si verò angulus horarius fuit quadrante minor, contra tertio quintum addas Inuentum pro altitudinibus Cancrī; ac subtrahas, pro Capricorno.

Immo eadem altitudo Capricornī, est etiam altitudo alterius horæ Cancrī eiusdem, dummodo arcum diurnum illius non excedat. Exempli causa, Altitudo, quæ pro Capricorno inuenta est cum altitudine horæ 23. Cancrī, est etiam altitudo horæ 11. eiusdem Cancrī; & sic Altitudo, quæ inuenta

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fuit cum hora 22. est hora 10. quæ cum hora 21. hora 9. quæ cum hora 20. hora 8. &c. vt patet in sequenti calculo horæ 23. 22. 21.

27 *Nota quintò.* Illas tantum altitudines horis delineandis conducere, quarum distantia semidiurnum arcum non excedunt; velut in horis Cancrì, huius exempli, grad. 115. m. 46. & in horis Capricorni grad. 64. m. 14.

28 Quibus prænotatis accipe *Inuenti secundi* Logarithmum 981180. qui communis erit omnibus horis propositi paralleli. Huic, vt nimis prolixam multiplicationem Sinuum euites, adde Logarithmum secundum (hoc est complementi) anguli, siue distantie horarie singularum horarum; & collecti Logarithmi Sinus, erit *Inuentum quintum*, addendum, vel subtrahendum *Inuento tertio*; vt sequitur.

*Omnium Altitudinum Cancrì, & Capricorni
singularum horarum calculi
paradigmata.*

Hora	Distantiæ [Grad. M.]	Logarithmi	Sinus	Altitudin. [Grad. M.]
23, & 11. 53 ac 13 30	100. 46	Logarit. excess. 927140 Log. Inu. 2. cõis. *981180 Log. Inuent. 5. 908320 Sinus	*28196 12129 { Subtrahere	Inuent. 3. Inuent. 5.
		Differen. Sin. alti. quæf. h. 23. 53	16067	9. 15
		Sûma Sin. alt. h. 11. 53, & 13. 30	40325	23. 47
22, & 10. 53 ac 14 30	85. 46	Logarith. secundus 886816 *981180 867996	*28196 4798 { Colligere	
		Summa Sin. Altitud. hor. 22. 53	32994	19. 16
		Differ. Sin. alt. h. 10. 53, & 14. 30	23398	13. 32
21, & 9. 53 ac 15 30	70. 46	Logarith. secundus 951774 *981180 932954	*28196 21360	
		Summa Sin. Altitud. hor. 21. 53	49556	29. 42
		Differ. Sin. alt. h. 9. 53, & 15. 30	6836	3. 55
Hora				

Hora	Distantia Grad. M.	Logarithmi	Sinus	Altitudin. Grad. M.
20	55. 46	Logarith. secundus 975017 *981180 956197	28195* 36460	
		Summa Sin. Altitud. hor. 20. 55	64656	40. 18
		Differ. Sin. Altitud. hor. 16. 30	8264	4. 45
19	40. 46	Logarith. secundus 987931 *981180 969111	28196* 49116	
		Summa Sin. Altitud. hor. 19. 46	77312	50. 38
		Differ. Sin. Altitud. hor. 17. 30	20920	12. 4
18	25. 46	Logarith. secundus 995451 *981180 976631	28196* 58378	
		Summa Sin. Altitud. hor. 18. 46	86574	59. 58
		Differ. Sin. Altitud. hor. 18. 30	30182	17. 34
17	10. 46	Logarith. secundus 999229 *981180 980409	28196 63697	
		Summa Sin. Altitud. hor. 17. 46	91893	66. 46
		Differ. Sin. Altitud. hor. 19. 30	35501	20. 48
16	4. 14	Logarith. secundus 99881 *981180 981061	28196* 64657	
		Summa Sin. Altitud. hor. 16. 25	92853	68. 14
		Differ. Sin. Altitud. hor. 20. 30	36461	21. 23

Horæ	Distantie Grad. M.	Logarithmi	Sinus	Altitudin. Grad. M.
15	19. 14	Logarith. secundus 997506 *981180 978686	*28196 61222	
		Summa, Sin. Altitud. hor. 15. 55	89418	63. 25
		Differ. Sin. Altitud. hor. 21. 30	33026	19. 17
14	34. 14	Logarith. secundus 991738 *981180 972918	*28196 53607	
		Summa, Sin. Altitud. hor. 14. 55	81803	54. 54
		Differ. Sin. Altitud. hor. 22. 30	25411	14. 44
13	49. 14	Logarith. secundus 981490 *981180 962670	*28196 42341	
		Summa, Sin. Altitud. hor. 13. 55	70537	44. 52
		Differ. Sin. Altitud. hor. 23. 30	14145	8. 8
12	64. 14	Logarith. secundus 963820 *981180 945000	*28196 28178	
		Summa, Sin. Altitud. hor. 12. 55	56374	34. 20
		Differ. Sin. Altitud. hor. 24. 30	18	0. 0

De reliquis parallelis.

²⁹ **H**Ac eadem Methodo supputantur altitudines aliorum parallelorum Zodiaci; & vnico quidem calculo quatuor signorum altitudines. Eadem est enim altitudo eiusdem horæ Geminorum, & Leonis, & in opposito parallelo altitudo initij Sagittarij, & Aquarij. Itidem eadem altitudo est initij Tauri, & Virginis, ac in opposito parallelo, Scorpionis, & Piscium.

Exem-

Exemplum paralleli Geminorum. In quo unica operatione, singularum horarum altitudines in initijs Geminorum, & Leonis, Sagittarij, & Aquarij exantlantur.

³⁰ **S**upponendum est autem Primum propositi Geminorum paralleli declinationem ex prim. part. lib. 2. cap. 6. prax. 1. esse grad. 20. m. 13.
³¹ Secundo; Arcum diurnum eiusdem paralleli (ex praxi 3. huius capitis) esse grad. 111. m. 36. Quibus si gradus 15. subtrahas, relinquetur angulus, siue distantia horaria horæ 23. gradus 96. m. 36. & sic deinceps pro reliquis horis, per quindenorum graduum subtractionem, cæteras distantias horarias acquires; iuxta praxim 7. num. 4. huius capitis.
³² Tertio; latus maius trianguli horarij in hoc exemplo erit grad. 69. m. 47. complementum scilicet declinationis dati paralleli Geminorum grad. 20. m. 13. Latus minus remanet idem, ac in Tropicis, videlicet grad. 45. Ac proinde Inuentum secundum, & tertium, per tertium casum num. 16. huius praxis inuenientur; sicut in Tropicis; sic

CALCVLVS.

I G. M. I Sinus

³³ Altitudo Æquinoctialis	145. 0 I	
Declinatio paralleli Geminorum	20. 13 I	
Summa; Altitud. Merid. ☉ in ♊, & ♎. Inuentum I.	165. 13 I	90790
Differentia; Altitud. Merid. ☉ in ♋, & ♏	124. 47 I	41919
Sinuum aggregatum	I	I 132709
Aggregati semiffis Inuentum II.	I	66354
Idem sublatum à I. Inuentum III.	I	I 24436

Exem-

Ititudin.
rad. M.

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Exem-

Sequuntur speciales calculi omnium horarum in

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.
23	96. 36	Logarithmus excessus 906046 Logarith. Inuenti secundi generalis *982184 Logarithmus Inuenti quinti 888230 Differentia, Sin. Altitudinis horæ 23. II, & Ω 16822 Summa, Sin. Alt. h. 11. II, & Ω, & h. 13. I, & Ω 32050	*24436 7614 16822 32050	9. 41 18. 41
22	81. 36	916460 *982184 898644 Summa, Sinus Altitudinis horæ 22. II, & Ω Differ. Sin. Altit. h. 10. II, & Ω, & h. 14. I, & Ω	*24436 9700 34136 14736	19. 57 8. 28
21	66. 36	959895 *982184 942079 Summa, Sin. Altitudinis horæ 21. II, & Ω Differen. Sin. Altit. h. 9. II, & Ω, & h. 15. I, & Ω	*24436 26331 50767 1895	30. 31 1. 5
20	51. 36	979319 *982184 961503 Summa, Sin. Altitudinis horæ 20. II, & Ω Differentia, Sin. Altitudinis horæ 16. I, & Ω	*24436 41234 65667 16795	41. 2 9. 40
19	36. 36	990462 *982184 972646 Summa, Sinus Altitudinis horæ 19. II, & Ω Differentia, Sinus Altitudinis horæ 17. I, & Ω	*24436 53263 77699 28827	50. 59 16. 45
18	21. 36	996838 *982184 979022 Summa, Sinus Altitudinis horæ 18. II, & Ω Differentia, Sinus Altitudinis horæ 18. I, & Ω	*24436 61681 86117 37245	59. 27 21. 52

Initio Geminorum, & Leonis; Sagittarij, & Aquarij.

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.
17	6. 36	999711 *982184 981895	*24436 65913	
		Summa, Sinus Altitudinis horæ 17. II, & Ω	91349	64. 37
		Differentia, Sinus Altitudinis horæ 19. I, & ∞	41477	24. 30
16	8. 24	999532 *982184 981716	*24436 65650	
		Summa, Sinus Altitudinis horæ 16. II, & Ω	90086	64. 16
		Differentia, Sin. Altitudinis horæ 20. I, & ∞	41214	24. 20
15	23. 24	996273 *982184 978457	*24436 60876	
		Summa, Sinus Altitudinis horæ 15. II, & Ω	85312	58. 34
		Differentia, Sinus Altitudinis horæ 21. I, & ∞	36440	31. 22
14	38. 24	989415 *982184 971599	*24436 52002	
		Summa, Sinus Altitudinis horæ 14. II, & Ω	76438	49. 51
		Differentia, Sinus Altitudinis horæ 22. I, & ∞	27566	16. 0
13	53. 24	977541 *982184 959725	*24436 39555	
		Summa, Sinus Altitudinis horæ 13. II, & Ω	63991	39. 48
		Differentia, Sinus Altitudinis horæ 23. I, & ∞	15119	8. 42
12	68. 24	956529 *982184 938783	*24436 24418	
		Summa, Sinus Altitudinis horæ 12. II, & Ω	48854	29. 15
		Differentia, Sinus Altitudinis horæ 24. Cyphra	18	0. 0

Excm.

*Exemplum calculi Altitudinum ad horas singulas
Phæbo Æquatorem lustrante.*

Horæ	Distantiæ		[Logarith.] I secundi.	Altitudin. I Grad. M.
23	75.	0	Logarithmus secundus Logar. Altit. Æquatoris generalis Summa Altit. hor. 23. & 13. v. $\frac{1}{2}$	941300 *984948 926248 10. 33
22	60.	0	Summa Altit. hor. 22. & 14. v. $\frac{1}{2}$	969897 *984948 954845 20. 42
21	45.	0	Sūma Logar. Altit. h. 21. & 15. v. $\frac{1}{2}$	984947 *984948 969896 30. 0
20	30.	0	Sūma Logar. Altit. h. 20. & 16. v. $\frac{1}{2}$	993753 *984948 978701 37. 46
19	15.	0	Sūma Logar. Altit. h. 19. & 17. v. $\frac{1}{2}$	998494 *984948 983442 43. 5
18			Altitudo horæ 18. semper est Altitudo Æquatoris Re- gionis, velut in præsentī exemplo. grad.	45. 0

*Praxis IX. Data ex antecedenti praxi altitudine Solis, quacumque horā, &
in quonīs parallelo, vmbra illius Gnomonicam, tūm
rectam, tūm versam metiri.*

Quid sit vmbra recta, & versa; quæ Solis altitudinis apparentis, & vere:
limbi, & centri; & quomodo singulæ inuestigandæ, satis explicavi-
mus supra in secunda, & nona praxi capitis primi huius lib.

Hic tamen observandum est Geometras, qui Gnomonicas Tabulas, ea-
rumque usum tradunt, non religiosè adhibere apparentem altitudinem
limborum Solis, sed veram altitudinem centri Solis; (spretis etiam paral-
laxi. & refractione;) & quidem, hac in re, citra errorem sensibilem.

Data igitur Solis altitudine eius vmbra facillimè patescit ex dictis *Prima
parte, lib. 2. cap. 6. prax. 4. num. 13.* si fiat Analogia; Vt Radius 100000. Ad tan-
gentem complementi altitudinis datæ: Ita Stylus in quocumque partes di-
uisus, ad partes vmbrae quæsitæ.

Nos autem cum Ioanne Paduano Veronensi, in Tabulis Gnomonicis in-
fra

fra sequentibus, supponimus stylum diuisum in partes 12. easque singulas in minuta sexaginta subdiuisas.

Exemplum.

S It data altitudo Solis existentis in principio Cancrī hora 9. Italica, grad. 3. m. 55. ad latitudinem Poli grad. 45. Queritur illius umbra hoc pacto. Vt Radius 100000. Ad complementi altitudinis datæ grad. 3. m. 55. Tangentem 1460592. Ita Stylus partium 12. ad 17527104. quibus diuisis per Radium, (abiectis scilicet figuris quinque postremis) relinquuntur P. 175. pro umbra quæsita. Deinde multiplicetur numerus abiectus 27104. in 60. & productus 1626240. rursus diuisus per radium dabit minuta 16. Vnde umbra quæsita euadet. P. 175. m. 16. seu rotunde P. 175. m. 17.

Praxis X. Datis angulo horario, & altitudine Solis, Azimuth eiusdem calculo inuestigare.

DE Azimuthis iuxta communem Astronomorum sensum egimus supra *Episagoge 3. cap. 3. num. 1. Primæ partis*. Nunc autem de iisdem dicendum est, ut accipiuntur ab Horographis in Gnomonica. Quo pacto Azimuth definitur, Arcus Horizontis inter Meridianum, aut Verticalem primarium, & Verticalem Solis interceptus; alijs circumferentia nuncupatus. Vt in superiori figura, *praxis 8. pag. 12.* Arcus Horizontis H K, vel K T, est Azimuth, siue circumferentia hor. 2. & 10. Astronomicarum.

Methodus indagandi Azimutha Solis existentis in Æquatore.

VT Radius, ad secantem altitudinis Solis: Ita Sinus anguli horarij, ad Sinum Azimuth quæsiti.

Exemplum. Quaratur Azimuth Solis in Æquatore hora 21. sub Altitudine Poli grad. 45. cuius horæ distantia ex *superiori praxi 8. num. 34.* est grad. 45. m. 0. Altitudo verò grad. 30. m. 0. Sic igitur operabimur.

Vt Radius 100000. Ad Altitudinis Solis grad. 30. m. 0. Secantem 115470. Ita Sinus anguli horarij grad. 45. m. 0. 70711. Ad Sinum 81650. cui respondet Azimuth à Meridiano grad. 54. m. 44. cuius complementum grad. 35. m. 16. erit Azimuth numeratum à puncto proximiori Verticalis primarij.

Vel Logarithmicè. Iungantur Logarith. anguli horarij grad. 45. 984248

Et Toimologarithmus Altitudinis Solis grad. 30. m. 0. 6247

Colligitur Logarithmus Azimuth, vt prius grad. 54. m. 44. 991195

*Methodus inueniendi Azimuth Solis in parallelis
extra Æquatorem.*

- 3 **V**T Sinus complementi altitudinis Solis, ad Sinum Anguli horarij : Ita Sinus complementi declinationis Solis, (siue paralleli dati,) ad Azimuth quæsitum.

Vbi nota. Si angulus horarius quadrantem grad. 90. excedit ; tunc sumendus est Sinus ipsius complementi ad 180. Præterea fac accipias angulum dati paralleli proptium.

- 4 *Exemplum.* Queratur Azimuth horæ 20. Italicæ, Sole parallelum Cancræ percurrente sub altitudine Poli grad. 45. cuius horæ (ex superiori praxi 8. sub num. 28.) distantia est grad. 55. m. 46. & altitudo grad. 40. m. 18. Vnde sic ordinabitur Analogia.

Vt Sinus complementi altitudinis Solis grad. 40. m. 18. 76267. Ad Sinum anguli horarij, grad. 55. m. 46. 82675. Ita Sinus complementi declinationis Solis in dato parallelo Cancræ grad. 23. m. 30. 91706. Ad 99411. Sinum grad. 83. m. 47. Azimuth Solis numeratum à Meridiano ; cuius complementum grad. 6. m. 13. erit Azimuth eiusdem horæ numeratum à Verticali primario.

Vel Logarithmicè, iungantur

Logarithmus anguli horarij, siue distantie grad. 55. m. 46. ——— 991738

Logarithmus complementi declinationis Solis grad. 23. m. 30. 996240

Tomologarithmus proprius altitudinis Solis grad. 40. m. 18. ——— 11766

Colligitur, vt prius Logarith. Azimuth à Meridiano gr. 38. m. 47. 999744

Praxis XI. De speciali calculo Altitudinum horarum Astronomicarum, & Inæqualium, siue Antiquarum ; & pro horarijs construendis in regionibus sub Altitudine Poli, maiori grad. 66. m. 30.

- 1 **H**Actenus exempla dedimus in horis tantum Italicis ; ideò videndum est, in quibus reliqua horarum genera cum illis conueniant, vel disconueniant in calculo.

De Astronomicis.

- 2 **P**Ro horis Astronomicis, quæ & Gallicæ, Germanicæ, & Hispalicæ dicuntur altitudines parallelorum, & Æquatoris eadem planè Methodo supputantur, qua de Italicis dictum est. Tria nihilominus sunt illis specialia, & propria.

- 3 *Primum.* Quod earum distantie vtrique à Meridiano per gradus quindecim terminantur, vt supra in praxi 7. num. 2. huius capituli.

- 4 *Secundum.* Quatuor Altitudines, tres videlicet ipsius horæ duodecimæ

Au-

Australis, nempe vtriusque Tropici, & Aequatoris; & altitudo horæ sextæ semper sunt notæ tantum ex fundamentali calculo trium primorum Inuentorum.

Nam aggregatum ex gradibus altitudinis Aequatoris, & declinationis Solis, est altitudo horæ duodecimæ in principio Cancrī. Eorundem graduum differentia est eiusdem duodecimæ altitudo in principio Capricorni; & altitudo Aequatoris plani, est etiam altitudo horæ duodecimæ in Aequatore.

Altitudo verò horæ sextæ in vtroque parallelo opposito, siue Tropico- rum, siue aliorum, pro quibus calculus instituitur, est semper arcus In- uenti tertij. Veluti sub altitudine Poli grad. 45. Altitudo Horizontalis ho- ræ sextæ in vtroque Tropico- rum est grad. 16. m. 23.

⁵ *Tertium.* Istarum horarum altitudinum supputatio maximè compendio- sa est. Siquidem in parallelis omnibus sufficit alterutrius tantum partis, Orientalis scilicet, aut Occidentalis, altitudines supputare; nam vtrunque à Meridiano, quæ horæ distantiam æqualem habent, eadem gaudent altitu- dine. Sed hoc etiam horis antiquis conuenit.

Monitum generale.

⁶ Illud autem hic summo opere animaduertendum, vt cum distantia horaria quadrantem (hoc est gradus 90.) excedit, in omnibus horarum generi- bus, pro calculo Inuenti quinti, accipias Sinum, vel Logarithmum gra- duum excessus supra quadrantem, (quod etiam supra in 8. Praxi admonui- mus;) actum *Inuentum quintum* non addendum, sed subtrahendum *ter- tio*; vt inde *sextum*, & *ultimum* emerget, cui respondent gradus altitudinis quæsitæ. Et hoc quidem necessariò obseruandum est in horis omnibus, vl- tra sextam Astronomicam, & secundam, vel decimam ex Antiquis.

De horis Inæqualibus, siue Antiquis.

⁷ Horæ Antiquæ, seu Inæquales, speciales habent distantias pro singulis omnibus parallelis, ex proprio cuiuslibet arcu Semidiurno excer- pencas, ea Methodo, quam supra praxi 7. num. 7. præcepimus.

⁸ In harum altitudinibus supputandis *Inuenta* fundamentalia, nimirum *se- cundum*, & *tertium* pro vno parallelorum septentrionalium comparata, deseruiunt etiam eidem opposito Australi. At *Inuentum quintum* supputan- dum est pro singulis horis, cum proprijs distantijs cuiuslibet paralleli Sep- tentrionalis seorsim à supputatione *Inuenti quinti* horarum paralleli Au- stralis illi oppositi: & habito *Inuento quinto*, vt *sextum*, & *ultimum* adpiscar- is, in signis Septentrionalibus, *quinto* eidem addendum est *tertium*, & in Au- stralibus subtrahendum.

- 9 Coeterum Aequatoris altitudines eadem sunt in horarijs antiquis, ac in Astronomicis, & Italicis.
- 10 Præterea altitudines omnes horæ sextæ, quæ in horologio antiquo eundem Meridiani locum tenet, quem hora duodecima in Astronomico, eadem pari ratione habentur ex calculo fundamentali, pro binis singulis parallelis sibi inuicem oppositis, quibus talis calculus deferuit.
- 11 Altitudines tandem Orientales, cum Occidentalibus horarum in eodem parallelo æquidistantes à Meridiano prorsus conueniunt; quod quidem supputationis non parum, velut in Astronomicis, compendium affert.

Exemplum.

- 12 **Q**uæritur altitudo horæ tertiæ Antemeridianæ in Tropico Cancræ, & Capricorni pro horologio antiquo Horizontali, sub altitudine Poli grad. 45.

Calculus fundamentalis est idem, ac ille, qui habetur supra *praxi* 8. num. 22. *huius capituli*, pro Cancro, & Capricorno horarum Italicarum, & Astronomicarum.

Hinc altitudo horæ sextæ in principio Cancræ est grad. 68. m. 30. In principio Capricorni grad. 21. m. 30. In Zodiaco grad. 45. m. 0. sicut in hora duodecima Astronomica, cum qua & sexta antiqua prorsus cõincidit.

Inuentum secundum est 64846. eiusdem Logarithmus Generalis, 981180. Inuentum tertium 28196. ut ibidem pro Tropici horarum Italicarum.

Distantia horæ tertiæ antiquæ in Cancro est grad. 57. m. 54. in Capricorno grad. 32. m. 6. Ut habetur supra in *Tabella praxi* 7. num. 7. *huius capituli*.

Quibus præmissis utraque altitudo horæ tertiæ propositæ seorsim propter diuersam distantiam calculo exaranda est.

Calculus horæ tertiæ antiquæ in Cancro.

13 L ogarithmus Inuenti secundi generalis	981180	Logar.
Logarithmus secundus distant. hor. 3. grad. 57. m. 54.	972542	Sinus.
Logarithmus Sinus Inuenti quinti	953722	34448
Sinus, Inuentum tertium addendum		28196
Aggregatum, Sinus altitud. horæ 3. quæsita grad. 38. m. 47.		62644

Calculus horæ tertiæ antiquæ Capricorni.

14 L ogarithmo Inuenti secundi generalis	991180	Logar.
Logarithmus secundus distant. grad. 32. m. 6.	992795	Sinus.
Logarithmus Sinus Inuenti quinti	973975	54424
Inuentum tertium subtrahendum		28196
Differentia, Sinus altitudinis horæ 3. quæsita grad. 16. m. 30.		26730
		Mo.

15 Modo calculus iste illud habet compendij, quod altitudo horæ tertiæ Cancri, est etiam altitudo horæ nonæ Pomeridianæ eiusdem Cancri, & sic altitudo horæ tertiæ Capricorni eadem est, ac altitudo horæ nonæ eiusdem paralleli.

16 Eadem prorsus ratione operandum est in cæteris parallelis, noua pro binis singulis sibi inuicem oppositis Inuenta generalia, prima scilicet, secunda, & tertia instituendo, & reliqua deinceps seorsim peragendo in singulis horis.

17 Sequitur Tabella.

Horæ In- æquales.	Altitudines Cancr.		Vmbra		Altitudines Capricorni.		Vmbra	
	Grad.	M.	P.	M.	Grad.	M.	P.	M.
12	0.	0	Infinita		0.	0	Infinita	
11	1	12.	3	56. 14	5.	57	115.	8
10	2	25.	12	25. 30	11.	10	60.	47
9	3	38.	48	14. 55	15.	30	43.	16
8	4	52.	3	9. 20	18.	46	35.	20
7	5	63.	22	6. 1	20.	48	31.	36
6		68.	30	4. 44	21.	30	30.	28

generibus in eodem plano semper sunt eadem; mutatis tantum horarum denominationibus, ut in Tabella sequenti.

Altitudines {	G.	1	0	10	20	30	37	43	45	43	37	30	20	10	0
	M.	1	0	33	42	1	0	46	51	0	5	46	0	42	33
Horæ Astronomicæ.	1	6	1	5	4	3	1	2	1	1	0	1	9	8	7
Horæ Italicæ.	1	2	1	3	1	4	1	5	1	6	1	7	1	8	1
Horæ Babylonice.	1	2	1	1	1	0	1	9	1	8	1	7	1	6	1
Horæ Antiquæ.	1	2	1	1	1	0	1	9	1	8	1	7	1	6	1

De Altitudinibus supputandis pro horologijs Regionum, quibus Polus eminet supra grad. 66. m. 30.

19 IN Regionibus prædictis Altitudines Solis inuestigantur per præcepta Secundi casus, prax. 8. num. 13. & sequentibus.

20 Hic distantia horarum numerantur à Meridiano, sumendo grad. 15. pro hora 1. ante, & post Meridiem; grad. 30. pro duabus, &c. sicut in Astronomicis, supra prax. 7. num. 2.

21 Arcus diurnus minimus est grad. 360. siue horarum 24. ita, ut sub altitudine

dine

Logar.
Sinus.
34448
28156
62644

Logar.
Sinus.
54426
28190
26730
Mo.

dine Poli grad. 90. Semestris exultat. De quo videatur, quæ diximus supra, *praxi 3. num 4. huius capituli.*

- 22 Altitudo maxima horæ 12. in principio Cancræ, & aliorum parallelorum, qui Horizontem non secant, est duplex; Australis vna, altera Borealis. Prima conflatur ex altitudine Æquatoris, & declinationis Solis aggregato; vt in exemplo allato supra *praxi 8. num. 14.* est grad. 41. m. 30. Secunda ex eorundem graduum differentia, quæ ibidem est grad. 5. m. 30.
- 23 Sextæ autem altitudo semper est Arcus *Inuenti tertiæ*, vt in citato exemplo grad. 22. m. 17.
- 24 Reliquæ omnes altitudines eodem prorsus modo inveniuntur, ac in horis Astronomicis.

*Easdem Altitudines in regionibus sub latitudine Poli
maiori gradibus 66. m. 30. alia Methodo
expiscari.*

- 25 **L**ogarithmus Secundus distantia à Medio Cœlo, cum Mesologarithmo Secundo declinationis, dabit Mesologarithmum vnus arcus.
Deinde Logarithmus declinationis cum residuo Logarithmi Secundarius mox inuenti, & Logarithmo Summæ ex ipso, & eleuatione Polari, quando distantia à Medio Cœlo est quadrante minor in parallelo Boreali, & maior in Australi, aut differentia, quando ipsa sit maior quadrante in Boreali, & minor in Australi, dabit Logarithmum Altitudinis Solis horæ diurnæ, aut depressionis horæ nocturnæ proposita.

Exemplum primum.

- 26 **Q**uæritur in loco sub eleuatione Poli grad. 76. Altitudo Solis existentis in principio Cancræ, in distantia horarum duarum, idest, grad. 30. à Medio Cœlo.

CALCVLI FORMA.		I G. M. I	
Distantia à Medio Cœlo.	I 30. 01	l 21 9937531	I 1960128
Declinatio Borealis maxima.	I 23. 32	m 21 10361011	l 1960128
Arcus.	I 63. 18	l m 110298541	l 21034745
Eleuatio Polaris.	I 76. 01	l 1	l 1
Summa.	I 139. 18	l 1	l 1981431
Alt. tudo.	I 35. 25	l 1	l 1976304

Exem-

Exemplum secundum.

²⁷ **Q**uaritur ibidem Depressio Solis existentis in principio Capricorni in distantia horarum septem, idest grad. 105. à Medio Cœlo, per calculum sequentem inuenitur grad. 26. m. 25.

CALCVLI RATIO. I G. M. I

Distantia à Medio Cœlo.	105. 01 l	21 9413001	1
Declinatio maxima Australis.	23. 32 m	2110361011	1960128
Arcus.	130. 43 l m	19774011rl	21006565
Elevatio Polaris.	176. 01	1	1
Summa.	1106. 43 l	1	11 1998125
Depressio.	126. 25 l	1	11 1964818

*Dereliquis supputationibus Azimuthorum, scilicet
& umbrarum in omnibus horarum
generibus.*

²⁸ **P**redictorum calculus idem est in omni horarum genere, idco nihil est speciale addendum.

*Datis ex precedenti capite Altitudinibus umbris, & Azi-
muthis Tabulas Gnomonicas construere iuxta Me-
thodum Ioannis Paduani Veronensis.*

Caput II.

Praxis I. Tabulam Horologij Horizontalis ordinare.

¹ **T**abulas Gnomonicas Paduana Methodo fabricare, nihil est aliud, quam Arcus Azimuthales, siue Horizontales horarum, cum umbris altitudinum respondentium, ita in continuum disponere, vt circuli peripheriam, in gradus 360. diuisam compleant.

² Talis autem peripheria circulum plano Conotomo, seu Gnomonico parallellum repræsentare debet; velut in Horizontalibus horarijs, Horizontem; in Verticalibus, Verticalem plani; in Orientalibus, & Occidentalibus, Meridianum, &c.

nus supra,

parallello-
era Borea
olis aggre-
o. Secunda

o exemplo

ac in horis

re Poli

ogarithmo
ns.
Secundiar-
ine Polari,
o Boreali,
adrante in-
Solis horæis existentis
grad. 30. à

1960128

121034745

1

1981431

1976304

Exem

3 Sit enim, *exempli causa*, peripheria A B C D, in gradus 360. continuos diuisa pro Horologio Horizontali describendo; ea Horizontis planum referet; Diameter A B, Meridianum, siue lineam Styli; A, punctum communis sectionis Meridiani, & Horizontis Australis; B, Borealis. Diameter C D, Verticalem primarium; C, punctum Ortus; D, Occasus.

Hincque planum Semicirculi T A D B, erit pars, in quam cadent omnes horæ matutinae; & semicirculus T A C B, in quem terminantur Vespertinae. T C A D, pars Australis; T C B D, Borealis.



4 Cum autem arcus prædicti Azimuthales supputati sint hinc inde à Meridiano, partim à puncto Australi, A, & partim à Boreali, B; ortum, aut occasum versus, duntaxat ad quadrantes; (propterea quod Sinuum rectorum, Logarithmorumque operationes 90. graduum numerum non excedant;) ut continuum in circulum graduum 360. numeratum à puncto Boreali, B, per ortum, C, conformetur; opere pretium est scire, qui ad Australes, quæ ad Boreales quartas singulas pertineant. In cuius rei gratiam duo necessariò præmittenda sunt. Et in primis quanam horarum sint matutinae, & quæ vespertinae; Deinde, quæ Boreales, & quæ Australes.

5 Quorum *primum* de facile assequemur ex Tabula distantiarum horariorum. Nam horæ, quarum distantia per subtractionem quindenorum graduum ab Arcu Semidiurno excerpuntur, (*iuxta præceptum praxis 7. cap. 1. huius libri*) omnes sunt vespertinae, seu Pomeridianæ; reliquæ vero, quarum distantia per subtractionem ex ipsis gradibus quindecim, & exinde per additionem quindenorum graduum emergunt, Matutinae, seu Antemeridianæ; quod etiam ibidem in Tabella horarum ab Ortus, & Occasu adnotauimus. Vbi apparet Matutinas ab Occasu esse hor. 9. 10. 11. 12. 13. 14. 15. & 16. Vespertinas autem 17. 18. 19. 20. 21. 22. & 23.

6 Quoad *secundum* nimirum, quæ horæ sint Australes, quæue Boreales, duplex traditur via.

7 *Prima*, sic. Ex Tabula arcuum Semidiurnorum, quæ habetur supra *præxi 3. capituli 1. huius libri*, accipiat arcus Semidiurnus Capricorni, conueniens altitudini Equatoris supra datum planum, non secus, ac si altitudo Equatoris esset altitudo Poli. Nam horæ omnes, quæ in prædicta distantiarum Tabella, minorem hoc ipso arcu distantiam habent à Meridiano, Boreales erunt; & ex illis matutinae cadent in quartam T D B; & Vespertinae in quartam T C B.

EXCIP.

Exemplum.

8 **P**roponatur construenda Tabula pro Horologio Horizontali sub altitudine Poli grad. 45.

Altitudo Æquatoris supra datum planum Horizōtis est itidem graduum 45. Huic in Tabula arcuum Semidiurnorum supracitata respondet arcus Capricorni grad. 64. m. 14. Qui est distantia Solis à Meridiano vique ad circulum Verticalem primarium, C D.

Quoniam itaque in citata distantiarum horariorum Tabella, inter horas matutinas hor. 13. 14. 15. & 16. habent distantias à Meridiano minores arcu prædicto grad. 64. m. 14. ideo collocandæ sunt in quarta matutina Boreali, T D B; reliquæ verò 9. 10. 11. & 12. in quarta matutina Australi T A D.

Ex Vespertinis autem, ob eandem rationem hor. 17. 18. 19. & 20. spectant ad quartam Vespertinam Borealem T B C; & reliquæ 21. 22. & 23. ad Vespertinam Australem, T C A.

9 *Secunda Methodus* eiusdem rei inuestigandæ, hæc esto.

Per 6. *praxim*, capituli primi huius libri, inuenta altitudine Solis in Verticali primario; (quæ in præsentis exemplo inuenietur, vt ibidem grad. 34. m. 20.) expendantur altitudines horarum Cancræ. Et quæcumque hora maioris altitudinis fuerit, quam altitudo Solis in Verticali, ea Borealem partem obtinebit; Matutinam quidem, T D B, si hora sit Antemeridiana, veluti hor. 13. 14. 15. & 16. Vespertinam verò, T C B, si Pomeridiana, sicut hor. 17. 18. 19. & 20. Reliquæ autem eiusdem Tropici Cancræ minoris altitudinis, quam Verticalis, in Australem partem, iuxta propriam earum denominationem, Matutinam scilicet, aut Vespertinam, cadent.

10 Hic tamen diligenter *obseruandum*, difficultatem hanc distinguendi horas Boreales ab Australibus, tunc solum procedere, cum supra datum planum Gnomonicum Æquinoctialis eleuatur plus gradibus 23. m. 30. & minus gradibus 66. m. 30. Et quidem in illis tantum horis, quæ cadunt prope stylium, quales in Horizontalibus sunt horæ Tropici Cancræ. Nam horæ Æquatoris, ac Tropici Capricorni, citra ambiguitatem, sunt Boreales omnes.

11 Quod si Æquator supra datum planum eleuetur plures gradus, quam 66. m. 30. aut minus gradibus 23. m. 30. tota hæc difficultas euanescit. *Primo* etenim casu omnes horæ Tropici stylo viciniore describuntur in parte Australi. *Secundo* autem casu dimidiæ in parte Australi, & dimidiæ in Septentrionali contingent.

12 His præmissis Tabulæ diagramma contextitur, cum suis titulis in fronte columnarum, siue laterculorum, vt sequitur.

E

T A-

TABVLA HOROLOGII HORIZONTALIS
Ad latitudinem Poli grad. 45.

H. Italicæ	Tropicus Cancrī		Æquinoctialis		Tropicus Capricorni		H. Babil.
	Arcus		Arcus		Arcus		
	Grad.	M. l P. M.	Grad.	M. l P. M.	Grad.	M. l P. M.	
9	240. 13	175. 17					15
10	250. 12	49. 50					14
11	259. 53	27. 0					13
12	270. 0	17. 45	270. 0	Infinita.			12
13	281. 29	12. 3	280. 44	64. 32			11
14	296. 12	8. 26	292. 14	31. 44			10
15	317. 32	6. 0	305. 16	20. 48			9
16	349. 30	4. 48	320. 46	15. 29	310. 28	144. 40	8
17	25. 44	5. 11	339. 15	12. 50	322. 14	56. 6	7
18	52. 50	6. 58	360. 0	12. 0	335. 17	37. 54	6
19	70. 12	9. 51	20. 45	12. 50	349. 26	31. 35	5
20	83. 47	14. 9	39. 14	15. 29	4. 10	30. 38	4
21	95. 1	21. 5	51. 44	20. 48	18. 40	34. 18	3
22	104. 20	34. 21	67. 46	31. 44	32. 14	45. 40	2
23	114. 7	73. 35	79. 15	64. 32	44. 33	63. 58	1
24	124. 20	Infinita.	90. 0	Infinita.			24

In prima columna à sinistris aspicientis describantur omnes horæ Italicæ, quas datum pl^unum capit; (iuxta præceptum praxis 7. num. 3. & praxis 8. num. 27. cap. 1. huius libri;) & è regione in extrema columna, à dextris ponantur horæ Babilonica, vt singulæ Babilonica, singulis Italicis ad complementum vique horarum 24. respondeant.

In columnis umbrarum è regione cuiuslibet horæ collocetur umbra, conueniens illius altitudini, in Cancro, in Æquatore, & in Capricorno, si omnes adfint; & si placeat, etiam in reliquis parallelis, vt fecimus nos in Tabula Horologij Horizontalis, quæ habetur infra lib. 2. huius partis.

In calce Tabulæ pro describendis horis Astronomicis, Hispanicis, &c. adijciatur umbra Altitudinis Poli ipsius plani, vt in præfenti grad. 45. cuius umbra est P. 12. m. o.

Tandem in columnis arcuum distribuuntur Azimutha horarum in Cancro, in Æquatore, & in Capricorno, quæ per praxim 10. capitis primi, huius libri, pro Horologio Horizontali ad Altitudinem Poli grad. 45. inuenta sunt, velut in Tabella hic appofita.

13 Qui tamen Arcus azimuthales, cum (sicut in principio huius praxis) admonebamus, non ita sint describendi, ut iacent, sed ita, ut integrum circulum graduum 360. in continuum efficiant; ad hoc peragendum in horis Tropici Cancrī; quatuor observandi sunt Canones.

14 Primus. Omnes arcus Azimuthales horarum Matutinarum, sine Antemeridianarum Cancrī, quae distantiam habent à Meridiano maiorem arcu Semidiurno Capricorni inuento cum altitudine Aequatoris (per numerum 7 huius praxis;) aut minorem altitudinem, quam sit altitudo Verticalis (per numerum 9.) erunt arcus in propria columna collocandi, si addantur gradibus 180.

Hora Italica	Cancrī	Aequinoctialis.		Capricorni
	Azimutha	Azimutha	Azimutha	Azimutha
9	60. 13			
10	70. 12			
11	79. 53			
12	90. 0	90. 0		
13	78. 31	79. 16		
14	63. 48	67. 46		
15	42. 28	54. 44		
16	10. 30	39. 14	49. 32	
17	25. 44	20. 45	37. 46	
18	52. 50	0. 0	24. 23	
19	70. 12	20. 45	10. 34	
20	83. 47	39. 14	4. 10	
21	84. 59	54. 44	18. 40	
22	75. 40	67. 46	32. 14	
23	65. 53	79. 15	44. 33	
24	55. 40	0. 0	55. 40	

Tales sunt in praesenti exemplo, Azimutha horarum 9. 10. 11. & 12. Si enim, exempli causa, Azimuth hor. 9. quod est grad. 60. m. 13. addatur gradibus 180. fiunt gradus 240. m. 13. Arcus graduum Peripheriae, numeratus ex B, per C; collocandus in columna arcuum Cancrī, è regione hor. 9. & sic de ceteris.

Ratio autem huius additionis grad. 180. patet. Cum enim hora 9. sit matutina Australis, eius Azimuth computatur in quarta T A D, ex A, versus D, grad. 60. m. 13. ut Arcus iste Azimuthalis ingrediatur in ordinem graduum 360. totius peripheriae numerata ex puncto B, per C, addendi sunt ei duo priores quadrantes, nempe B C, & C A, qui simul conficiunt grad. 180. & cum Azimutho hor. 9. grad. 240. m. 13. Ex quo manifesta erit ratio, tum additionis, tum subtractionis in reliquis etiam sequentibus regulis.

15 Secundus Canon. Omnes Arcus Azimuthales cuiuscumque horae Antemeridianae Cancrī; quae distantiam à Meridiano habent minorem eodem arcu Semidiurno Capricorni; sine altitudinem maiorem altitudine Solis in Verticali primario; erunt arcus collocandi in propria columna Tabulae Cancrī, si ab integro circulo grad. 360. auferantur.

Tales sunt in dato exemplo hor. 13. 14. 15. & 16. Unde si Azimuth, exempli gratia, hor. 13. Cancrī, quod est grad. 78. m. 31. de natur gradibus 360. relinquetur Arcus peripheriae eiusdem hor. 13. grad. 281. m. 29.

15 Tertius Canon. Si hora quaecumque Pomeridiana Cancrī distantiam à Meridiano habeat minorem, quam sit arcus Copricorni praedictus; aut altitudinem maiorem altitudine Verticali; arcus illius in columna Cancrī describendus, erit tantum Azimuth.

Tales in hoc exemplo sunt hor. 17. 18. 19. & 20. Ratio est, quia contin-

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gunt in quarta peripheriæ T B C, & earum Azimuth numeratur ex B, in C.
 17 *Quartus Canon.* Si hora quævis Pomeridiana distantiam à Meridiano habeat maiorem distantia prædicti arcus Capricorni; aut altitudinem minorem altitudine Verticali, erit arcus illius in continua Circuli peripheria, eiusdem horæ Azimuth, si à gradibus 180. auferatur.

Tales sunt hor. 21. 22. & 23. Quare si Azimuth hor. 21. quod est grad. 84. m. 59. auferatur è gradibus 180. relinquetur arcus illius grad. 95. m. 1.

18 Pro arcubus verò Capricorni, & Equatoris (cum in ijs horæ omnes sint Boreales) vnus datur Canon bipartitus, sic.

In Matutinis, siue Antemeridianis subtrahæ Azimuth gradibus 360. & differentia erit arcus quæsitus. In vespertinis, siue Pomeridianis, nihil mutatur, sed Azimuth cum arcu peripheriæ coincidit.

Exemplum pro Antemeridianis. Azimuth hor. 15. Equatoris est grad. 54. m. 44. ergo subtractum gradibus 360. relinquetur arcum graduum 305. m. 16. & Azimuth hor. 16. Capricorni grad. 49. m. 32. facta subtractione, relinquitur arcum graduum 310. m. 28.

Exemplum in Pomeridianis, patet in hor. 18. 19. 20. 21. 22. & 23. Equatoris, quarum arcus idem est, ac earum Azimuth. Similiter in Capricorno arcus horarum 17. 18. 19. 20. 21. 22. & 23.

Ratio satis elucet ex dictis.

19 Sin autem Aequatoris altitudo maior est gradibus 66. m. 30. (quo casu omnes horæ Tropici stylo viciniore, vt diximus, sunt Australes;) in horis Caneri Antemeridianis adde Azimuthum gradibus 180. in Pomeridianis subtrahæ, & habebis arcum quæsitum.

Pro Equatore, & Capricorno idem seruetur Canon, qui in superioribus num. 18.

20 Cum denique altitudo Aequatoris minor est grad. 23. m. 30. in eruendis horarum Tropici stylo viciniore arcubus, quatuor primi seruandi sunt Canones num. 14. 15. 16. 17. Et in alijs parallelis canon bipartitus num. 18.

21 Sic Tabula iam præfinita statim per sequens caput describatur illius Horologium in charta; & si omnia puncta eiusdem horæ in directum concurrant, rectè se habebit; sin minus, qui irrepsit error, calculo recognito, emendandus est.

Praxis II. Tabulam Horologij Verticalis Meridiem, & Boream directè aspicientis construere.

Hic suppono (ex lib. 2. cap. 7. prax. 1. & 2. Primæ Partis) tanquam nota.
 1 *Primum*, Planum Verticalè directum, circuli Verticalis primarij superniciem vtramque referre; Meridionalem, & Borealem.

2 *Secundum*. In facie Meridionali Polum eminere, semper oppositum illi, qui eleuatur supra Horizontem, ac totidem quidem gradibus, quot eleuatur Equator in plano Horizontali: sicut è conuerso, in eadem facie tanta est altitudo Equatoris, quanta est Altitudo Poli Regionis in plano Horizontis.

tis. In facie autem Boreali Polus idem extollitur, qui in Horizonte; sed totidem gradibus, quot eleuatur oppositus in facie Meridionali.

Hinc ubi Polus Arcticus supra Horizontem attollitur grad. 40. in facie Meridiana plani Verticalis directi eleuatur Antarcticus grad. 50. ac totidem Arcticus in facie Boreali; Æquator verò utrobique grad. 40.

3 Tertiū. In locis sub altitudine Poli grad. 45. idem esse Horologium Horizontale, & Verticale directum; ac proinde Tabulam eandem ibidem locorum planis utrisque deservire; mutatis tantum denominationibus Tropicorum, ut Cancer fiat Capricornus; & hora 24. sit 12. hora 23. sit 13. &c. de quo videatur *secunda praxis cap. 7. citati*; His positis.

4 In reliquis locis omnibus, qui non habent altitudinem Poli grad. 45. supputandi sunt anguli, siue distantie horarie, Altitudines, Umbra, & Azimutha propria, ut in sequentibus paragraphis. Ad quorum maiorem euidenciam proponatur construenda Tabula pro Horologio Verticali directo in loco, ubi eleuatur Polus Horizontalis grad. 40. ut supra in exemplo allato *num. 2.*

De Angulis, siue Distantijs horarijs.

5 **A**D Altitudinem Poli Horizontalis grad. 40. (non muralis grad. 50.) ex tabula Arcuum Semidiurnorum, quæ habetur *supra cap. 1. prax. 3. huius libri*, accipitur arcus Semidiurnus Cancræ grad. 111. m. 24. pro distantia hor. 12. Capricorni; & subductis grad. 15. pro distantia hor. 13. itidem Capricorni, & sic deinceps per subtractionem, & additionem quindenorum graduum, ut in *capite primo, prax. 7. huius libri*, donec non excedunt arcum Semidiurnum Cancræ sumptum ad altitudinem Poli Muralis grad. 50. qui arcus, est grad. 121. m. 15.

6 Dixi, Distantias eiusmodi, etsi desumptas ex Arcu Semidiurno Cancræ, esse Distantias horarum Tropici Capricorni, quia in superficiebus Verticalibus directè Meridiem aspicientibus, ubi eleuatur Polus Antarcticus; Sol tunc umbra Gnomonis Tropici stylo viciniorem describit, cum in Tropico Capricorni versatur; & è conuerso, cum Tropici Cancræ percurrit, Capricorni parallelum delineat. Quæ etiam de causa in Tabulæ huius diagrammate mutantur tituli columnarum, Arcuum, & Umbrarum, ut mox patebit.

7 Dixi, Arcum totum Semidiurnum Cancræ, accipiendum pro hora 12. ac deinceps pro 13. 14. 15. &c. non pro 24. 23. &c. ut in Horizontalibus, quia in hoc Horologio pars, quæ in Horizontali fuisset Occidentalis, fit Orientalis, & consequenter horæ Vespertinæ fiunt Matutinæ; ut apparet in Tabella.

8 Idem anguli, siue distantie à Meridiano Capricorni deseruiunt etiam horis in Cancro, seruata horarum correspondentia in secunda columna Tabellæ posita; ita, ut eadem sit distantia horæ 16. Capricorni, & horæ 20. Can-

cri;

cri; sic horæ 17. Capricorni, & horæ 19. Canceri, &c. ex quibus tamen distantijs Capricorni illæ tantum habent respondētem horam Canceri in facie

Australi, quæ non excedunt arcum Semi-diurnum Capricorni ad altitudinem Poli Muralis grad. 50. qui est grad. 58. m. 45. quales sunt horæ 13. 14. 15. 16. 17. 18. 19. & 20. reliquæ verò ad faciem *Borealem* spectant; iuxta numerorum dispositionem quartæ columnæ, cuius titulus est, *Hora Boreales*.

9 Pro horis Æquinoctialis distantia horæ 12. est grad. 90. distantia horæ 13. grad. 75. &c. ut in sexto Tabellæ laterculo, cuius titulus est, *Distantiæ in Aequatore*.

Distantiæ horariæ pro Verticali directo in locis sub Altitudine Poli grad. 40.

<i>Hora Australis Capricorni.</i>	<i>Hora correctas Capricorni.</i>	<i>Arcus diurnus Canceri ad Altitudinem grad. 40.</i>	<i>Hora Boreales.</i>	<i>Distantia in Aequatore.</i>	<i>Hora Baby-lonica.</i>
12		111. 24	12	90	12
13		96. 24	11	75	11
14		81. 24	10	60	10
15		66. 24	9	45	9
16	20	51. 24	8	30	8
17	19	36. 24	7	15	7
18	18	21. 24	6	0	6
19	17	6. 24	5	15	5
20	16	8. 36	4	30	4
21	15	23. 36	3	45	3
22	14	38. 36	2	60	2
23	13	53. 36	1	75	1
24		68. 36	24	90	0
25		83. 36	23		1
26		98. 36	22		2
27		113. 36	21		3

De calculo Generali trium priorum inuentorum pro Altitudinibus.

10 **A**ddantur simul trianguli horarij crus minus (quod est complementum Altitudinis Poli, idest Altitudo Æquatoris in Plano dato; ut in præsentis exemplo grad. 40.) & crus maius grad. 66. m. 30. nec non ex summa collecta pensetur ad quem ex tribus casibus capitis primi, praxis 8. huius libri, calculus pertineat; quæ modò cum sit grad. 106. m. 30. nempe quadrante maior, calculus spectabit ad tertium casum; in quo sic proceditur.

CAL.

CALCVLI FORMA.

I G. M. I Sinus

Crus minus, Altitudo Æquatoris in muro	I	40.	0	I
Compl. Cruris maioris, Solis maxima declinatio	I	23.	30	I
Aggregatum, cuius Sinus, est <i>Inuentum I.</i>	I	63.	30	I 89493
Differentia eorumdem Crurum	I	16.	30	I 28401
Sinuum aggregatum	I			I 117894
Aggregati Semissis, <i>Inuentum II.</i>	I			I 58947
Idem <i>Secundum Inuent.</i> sublatum à <i>I. Inuentum III.</i>	I			I 30546

II Modo accipiat *Logarithmus Inuenti secundi 977043*. Generalis. Quibus præmissis, (per *numeros 16. & sequentes praxis 7. capitis primi*,) supputentur Altitudines Tropici utriusque, & Æquatoris; applicando horis Capricorni, quæ ibi diximus de Cancro, & è conuerso. Ac dignissimum animaduersione notetur *Compendium*, quod habetur *ibidem num. 26*. Tum etiam fore non parum facilitatis, & breuitatis non iniocundæ, si querantur simul Altitudines, & Azimutha, disponendo calculos altitudinum super folio papyri in sinistra operantis, & in dextra aduersa calculos Azimuthorum. Nam eodem actu, quo in Tabulis Sinuum, & Logarithmorum inuenitur *Logarithmus Secundus anguli horarij pro altitudine*, exscribi poterit è regione *Logarithmus primus pro Azimutho*: & inuenta in iisdem Tabulis altitudine, Sinui respondente, statim eiusdem *Tomologarithmus ex aduersum* notari; quibus cum *Logarithmo generali*, *Complementi declinationis Solis grad. 23. m. 30. - 996247*. collectis, emerget *Logarithmus Azimuthi illius horæ*, cuius inuenta est Altitudo. Idem enim *Logarithmus anguli*, duobus Azimuthis, duarum scilicet horarum sibi inuicem respondentium, deseruit. *Tomologarithmus* verò semper assumitur Altitudinis proprius.

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12 - Speciales calculi Altitudinum, & Vmbrarum, & S. S.

Horæ	Distantia Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M. P. M.	Vmbræ M.
12. & 24. 70	111. 24	Logarith. excessus gr. 21. m. 24. 956215 Logar. Inu. secundi Generalis *977043 Logarithmus Inuenti quinti 933258	*30546 21502		
		Differentia, Sin. Altitudinis horæ 12. 70	9044	5. 11	132. 17
		Summa, Sinus Altitudinis horæ 24. 70	52048	31. 22	19. 42
13. & 25	96. 24	Logarit. excessus grad. 6. m. 24. 904715 Logarithmus Generalis *977043 881758	*30546 6569		
		Differentia, Sinus Altitud. horæ 13. 70	23977	13. 52	48. 37
		Summa, Sinus Altitudinis horæ 25. 70	37115	21. 47	30. 2
14. & 26	81. 24	Logarithmus secundus 917474 Logar. Inu. secundi Generalis *977043 894517	*30546 8802		
		Summa, Sinus Altitudinis horæ 14. 70	39348	23. 10	28. 3
		Differentia, Sinus Altitud. horæ 26. 70	21744	12. 33	53. 54
15. & 27	66. 24	Logarithmus secundus 960244 Logar. Inu. secundi Generalis *977043 937287	*30546 23599		
		Summa, Sinus Altitudinis horæ 15. 70	54145	32. 47	18. 38
		Differentia, Sin. Altitudinis horæ 27. 70	6947	3. 59	172. 21
16. & 20	51. 24	Logarithmus secundus 979510 *977043 956553	*30546 36785		
		Summa, Sinus Altitudinis horæ 16. 70	67331	42. 19	13. 31
		Differentia, Sinus Altitudinis horæ 20. 70	6239	3. 34	192. 33

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Calculus Azimuthorum utriusque Tropici.

		Logarith. & Tomologar.
	Logarithmus complementi anguli gr. 11 r. m. 24. ad 180.	996897
	Logarithmus complementi declinationis Solis gr. 23. m. 30. Generalis	*996240
	Tomologarithmus Altitudinis horæ 12. grad. 5. m. 11.	178
132. 17	Azimuth horæ 12. Capricorni grad. 59. m. 1. Arcus grad. 120. m. 59.	993315
	Tomologarithmus Altitudinis horæ 24. grad. 31. m. 22.	6862
19. 42	Azimuth horæ 24. Capricorni grad. 90. cuius Arcus est grad. 270. m. 0.	999999
	Logarithmus complementi anguli ad 180. grad. 96. m. 24.	999728
	Logarithmus complementi declinationis Solis, Generalis	*996240
	Tomologarithmus Altitudinis grad. 13. m. 52. horæ 13.	1284
48. 37	Azimuth horæ 13. 70. grad. 69. m. 50. Arcus 110. m. 10.	997252
	Tomologarithmus Altitudinis horæ 25. grad. 21. m. 47.	3217
30. 2	Azimuth horæ 25. 70. grad. 78. m. 56. Arcus 258. m. 56.	999185
	Logarithmus primus anguli grad. 81. m. 24.	999509
	Logarithmus complementi declinationis Solis, Generalis	*996240
	Tomologarithmus Altitudinis grad. 23. m. 10. horæ 14.	3651
28. 3	Azimuth horæ 14. 70. grad. 80. m. 30. Arcus 99. m. 30.	999400
	Tomologarithmus Altitudinis grad. 12. m. 33. horæ 26.	1050
53. 54	Azimuth horæ 26. 70. grad. 68. m. 16. Arcus grad. 248. m. 16.	996799
	Logarithmus primus anguli	996207
	Logarithmus declinationis Solis complementi, Generalis	*996240
	Tomologarithmus Altitudinis grad. 32. m. 47. horæ 15.	7535
18. 38	Azimuth horæ 15. eiusdem grad. 88. m. 23. Arcus idem	999982
	Tomologarithmus horæ 27. Altitudinis grad. 3. m. 59.	105
172. 21	Azimuth horæ 27. grad. 57. m. 24. Arcus 237. m. 24.	992552
	Logarithmus primus anguli	989294
	Logarithmus Generalis	*996240
	Tomologarithmus Altitudinis grad. 42. m. 19. horæ 16. 70.	13110
	Azimuth horæ eiusdem grad. 75. m. 45. Arcus idem	998644
13. 31	Tomologarithmus Altitudinis grad. 3. m. 34. horæ 20. 50.	84
192. 33	Azimuth horæ eiusdem grad. 45. m. 54. Arcus grad. 514. m. 6.	985618
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Sequuntur calculi Altitudinum, & Vmbrarum ρ, ε δ.

Horæ	Distantia Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.	Vmbræ P. M.
17	36. 24	Logarithmus secundus 990544 *977043 967617	*30546 47434		
		Summa, Sinus Altitudinis horæ 17. ρ	77980	51. 14	9. 38
		Differentia, Sin. Altitudinis horæ 19. δ	16888	9. 43	70. 5
18	21. 24	Logarithmus secundus 996898 *977043 973941	*30546 54878		
		Summa, Sinus Altitudinis horæ 18. ρ	81424	58. 40	7. 18
		Differentia, Sin. Altitudinis horæ 18. δ	24332	14. 5	47. 57
19	6. 24	Logarithmus secundus 999728 *977043 976771	*30546 58566		
		Summa, Sinus Altitudinis horæ 19. ρ	89112	63. 1	6. 7
		Differentia, Sinus Altitudinis horæ 17. δ	28020	16. 16	41. 8
20	8. 36	Logarithmus secundus 999509 Logar. Inu. secundi Generalis *977043 976552	*30546 58283		
		Summa, Sinus Altitudinis horæ 20. ρ	88829	61. 29	62. 39
		Differentia, Sin. Altitudinis horæ 16. δ	27737	16. 6	41. 35
21	23. 36	Logarithmus secundus 996207 *977043 973250	*30546 54024		
		Summa, Sinus Altitudinis horæ 21. ρ	84170	57. 45	7. 34
		Differentia, Sinus Altitudinis horæ 15. δ	23478	13. 35	49. 40

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Sequitur calculus Azimuthorum vtriusque Tropici.

	Logarith. & Tomologar.
Logarithmus primus anguli	977336
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 51. m. 14. horæ 17. 70	20332
Azimuth horæ eiusdem grad. 60. m. 22. Arcus idem	993908
Tomologarithmus grad. 9. m. 43. horæ 17. 25	627
Azimuth horæ eiusdem grad. 33. m. 31. Arcus 326. m. 29.	974203
Logarithmus primus anguli	956215
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 58. m. 40. horæ 18. 70	28398
Azimuth horæ eiusdem grad. 40. m. 3. Arcus idem	980853
Tomologarithmus Altitudinis grad. 14. m. 5. Arcus 18. 25	1225
Azimuth eiusdem grad. 20. m. 11. Arcus grad. 339. m. 49.	953780
Logarithmus primus anguli	904715
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 63. m. 1. horæ 19. 70	34320
Azimuth horæ eiusdem grad. 13. m. 1. Arcus idem	935275
Tomologarithmus Altitudinis grad. 16. m. 16. horæ 17. 25	1774
Azimuth horæ eiusdem grad. 66. Arcus grad. 353. m. 54.	902729
Logarithmus primus anguli	917474
Logarithmus Generalis complementi declinationis Solis	*996240
Tomologarithmus Altitudinis grad. 62. m. 39. horæ 20. 70	33778
Azimuth horæ eiusdem grad. 17. m. 22. Arcus grad. 342. m. 38.	947492
Tomologarithmus Altitudinis grad. 16. m. 6. horæ 16. 25	1738
Azimuth horæ eiusdem grad. 8. m. 12. Arcus idem	915452
Logarithmus primus anguli	960244
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis grad. 57. m. 45. horæ 21. 70	27277
Azimuth horæ eiusdem grad. 43. m. 28. Arcus grad. 116. m. 32.	983761
Tomologarithmus Altitudinis grad. 13. m. 35. horæ 15. 25	1232
Azimuth horæ eiusdem grad. 22. m. 11. Arcus idem	957716

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Sequuntur calculi Altitudinum, & Vmbrarum, &c.

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M. P.	Vmbræ M.
22	38. 36	Logarithmus secundus 989294 Logar. Inu. secundi Generalis *977043 Logarithmus Inuenti quinti 966337	*30546 46071		
		Summa, Sinus Altitudinis horæ 22. 75	76617	50. 1	10. 4
		Differentia, Sin. Altitudinis horæ 14. 56	15525	8. 56	76. 20
23	53. 36	Logarithmus secundus 977336 *977043 954379	*30546 34566		
		Summa, Sinus Altitudinis horæ 23. 75	65512	40. 55	13. 53
		Differentia, Sin. Altitudinis horæ 13. 56	4420	2. 32	271. 14

Calculus Altitudinum Solis in Aequatore.

Horæ	Distantiæ Grad.	Logarithmi secundi	Altitud. Gr. M. P.	Vmbræ M.
12	90	Altitudo Aequatoris Muri	0. 0	Infinita
13	75	Logarithmus secundus anguli 941300 Log. Altit. Aequat. Mural. gr. 40. Gener. *980807		
		Summa, Log. Altit. hor. 13. & 23. V. & 21	9. 35	71. 4
14	60	Logarithmus secundus 969897 *980807		
		Summa, Log. Altit. hor. 14. & 22. V. & 21	18. 45	35. 21
15	45	Logarithmus secundus 984948 *980807		
		Summa, Log. Altit. hor. 15. & 21. V. & 21	27. 2	21. 31
16	30	Logarithmus secundus 993753 *980807		
		Summa, Log. Altit. hor. 16. & 20. V. & 21	33. 49	17. 55
17	15	Logarithmus secundus 998494 *980807		
		Summa, Log. Altit. hor. 17. & 19. V. & 21	38. 23	15. 9
18	0	Altitudo Aequatoris Muralis	40. 0	14. 18

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Sequitur calculus Azimuthorum utriusque Tropici.

Vmbræ P. M.		Logarith. & Tomologar.
	Logarithmus primus anguli	979510
	Logarithmus Generalis	*996240
	Tomologarithmus Altitudinis grad. 50. m. 1. horæ 12. 70	19193
10. 4	Azimuth horæ eiusdem grad. 62. m. 51. Arcus grad. 297. m. 2.	994943
76. 20	Tomologarithmus Altitudinis grad. 8. m. 56. horæ 14. 25	530
	Azimuth horæ eiusdem grad. 35. m. 23. Arcus idem	976280
	Logarithmus primus anguli	990574
	Logarithmus Generalis	*996240
	Tomologarithmus Altitudinis grad. 40. m. 55. horæ 23. 70	12167
13. 53	Azimuth horæ eiusdem grad. 77. m. 18. Arcus grad. 282. m. 22.	998981
271. 14	Tomologarithmus Altitudinis grad. 2. m. 32. horæ 13. 25	42
	Azimuth horæ eiusdem grad. 47. m. 38. Arcus idem	986856

Calculus Azimuthorum Solis in Aequatore.

Vmbræ P. M.		Logar. primi & Tomolog
Infinita	Azimuth grad. 90. Arcus idem	
	Logarithmus primus anguli	998494
	Tomologarithmus Altitudinis grad. 9. m. 15.	610
71. 4	Azimuth gr. 78 m. 24. Arcus horæ 13. idem. Arcus horæ 21. gr. 281. m. 36.	999104
	Logarithmus primus anguli	993753
	Tomologarithmus Altitudinis grad. 18. m. 45.	2168
35. 21	Azimuth gr. 66. m. 9. Arcus horæ 14. idem. Arcus horæ 22 gr. 293. m. 51.	996121
	Logarithmus primus anguli	984948
	Tomologarithmus Altitudinis grad. 27. m. 2.	5025
21. 31	Azimuth gr. 52. m. 33. Arcus horæ 15. idem. Arcus horæ 21 gr. 307. m. 27.	989773
	Logarithmus primus anguli	969897
	Tomologarithmus Altitudinis grad. 13. m. 49.	8049
17. 55	Azimuth gr. 37. m. 0. Arcus horæ 16. idem. Arcus horæ 20 gr. 323. m. 0.	977946
	Logarithmus primus anguli	941300
	Tomologarithmus Altitudinis grad. 38. m. 23.	10575
15. 9	Azimuth gr. 19. m. 17. Arcus horæ 17. idem. Arcus horæ 19 gr. 340. m. 43.	951875
14. 18	Azimuth horæ 18. Arietis, & Libræ grad. 0. m. 0. Arcus 0. m. 0.	
De		De

De Vmbris in Plano Verticali.

14 **V** Mbræ in hoc plano, præter ea, quæ diximus capite primo, praxi 9. nihil addunt obscuritatis explicandum.

De reductione Azimuthorum in Arcus locandos in Tabula Horologij Verticalis.

15 **D** Escripito Tabulæ Diagrammate, vt in superiori praxi, cum numeris horarum Australium, Capricorni in primo laterculo à sinistris aspi-
cientis, & Borealium in extrema à dextris; tum proprijs titulis, & vmbreis: vt Azimutha reducantur ad Arcus, qui perpetuam continent peripheriam graduum 360. coepta numeratione ex B, per C, primum hic nos imaginari oportet circuli peripheriam, quam supra descripsimus in principio huius capituli, ita in facie Australi parietis locatam, vt punctum A, Zenith, & punctum B, Nadir; D, Orientem, & C, Occasum adamussim respiciant; in facie verò Boreali omnino è conuerso.

16 Deinde videndum ex Tabella distantiarum supra num. 6 & 7. quæ sint horæ Matutinæ, seu Antemeridiana, & quæ Vespertinæ, seu Pomeridiana.

17 Tum ad altitudinem Æquatoris in muro, grad. 40. accipiatur arcus Semidiurnus Capricorni grad. 68. m. 36. expendendo per Tabellam distantiarum horas Capricorni distantie minoris hoc Arcu; & quidem inter Matutinas inuenientur horæ 15. 16. 17. 18. & 19. inter Vespertinas autem horæ 20. 21. 22. & 23.

18 His peractis. Pro horis Matutinis distantia maioris gradibus 68. m. 36. Azimuth auferatur à gradibus 180. & relinquetur Arcus describendus in Tabula. Tales sunt horæ 12. 13. & 14.

19 Pro horis Matutinis distantia minoris, quales sunt prædictæ 15. 16. 17. 18. & 19. describe Azimutha, vt iacent.

20 Pro horis Vespertinis distantia minoris gradibus 68. m. 36. veluti sunt iam dictæ 20. 21. 22. & 23. Azimutha subtrahantur gradibus 360.

21 Pro reliquis autem maiori distantie, quales sunt horæ 24. 25. 26. & 27. addantur Azimutha gradibus 180.

22 Pro arcibus Cancræ, & Æquatoris horarum Matutinarum ipsa notentur Azimutha, & in Vespertinis subtrahantur gradibus 360.

23 Tandem in calce Tabulæ seorsim adscribatur umbra Altitudinis Poli Muralis grad. 50. quæ est P. 10. m. 4. & erit omnibus numeris Tabula completa.

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TABVLA HOROLOGII VERTICALIS

Directi ad latitudinem Poli grad. 40.

Hore Austra- les.	Tropicus Capricorni				Equinoctialis				Tropicus Cancr				Hore Borea- les.
	Arcus		Vmbra		Arcus		Vmbra		Arcus		Vmbra		
	Grad.	M.	P.	M.	Grad.	M.	P.	M.	Grad.	M.	P.	M.	
12	120.	59		132.	17		90.	0	Infinita.				12
13	110.	10		48.	37		78.	24	71.	4			11
14	99.	30		28.	3		66.	9	35.	21			10
15	88.	23		18.	38		52.	33	23.	31			9
16	75.	45		13.	11		37.	0	17.	55			8
17	60.	22		9.	38		19.	17	15.	9			7
18	40.	3		7.	18		0.	0	14.	18			6
19	13.	1		6.	7		340.	43	15.	9			5
20	342.	38		6.	12		323.	0	17.	55			4
21	316.	32		7.	34		307.	27	23.	31			3
22	297.	7		10.	4		293.	51	35.	21			2
23	282.	22		13.	53		281.	36	71.	4			1
24	270.	0		19.	42								24
25	258.	56		30.	2								23
26	248.	16		53.	54								22
27	237.	24		172.	21								21
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Praxis III. Tabulas pro Horologijs declinantibus à Meridiano construere.

De Prasupponendis.

- Suppono primò** (ex lib. 2. cap. 2. & 11. Prime partis) Horologium declinans illud esse, quod inscribitur planis ad Horizontem quidem rectis, sed à Meridiano declinantibus.
- Secundò**, illud esse duplex in genere, scilicet *Meridionale*, & *Boreale*; at in specie quadruplex. Nimirum Meridionale declinans ab Austro, ad Ortum; & Meridionale declinans ab Austro, ad Occasum: Item Boreale ab Aquilone, ad Ortum; & ab Aquilone, ad Occasum.
- Tertiò**. Quatuor istis diuersis Horologijs, sub eadem altitudine Poli, & ad eandem anri declinationem, siue ab Austro, siue ab Aquilone, duas tantum sufficere Tabulas, quæ unico fundamentali calculo supputantur. Tabula namque Horologij declinantis ab Austro, ad Ortum, continet etiam declinans ab Aquilone, similiter ad Ortum. Et Tabula declinantis ab Austro, ad Occasum, declinans itidem ad Occasum, ab Aquilone, iisdem gradibus. Vide num. 5. cap. 11. lib. 2. prime partis.

4 *Quartò.* In quacumque muri declinatione prædictis quatuor Horologijs supputandis tria prærequiuntur inuenta; scilicet, Altitudo Poli supra planum; quantitas Anguli inclinationis styli, siue lineæ substylaris à Meridiana; & quantitas Anguli inclinationis Meridianorum. Quorum inuestigationem docuimus supra lib. 2. cap. 11. prax. 5. num. 9. 10. & 11. Primæ partis.

Exemplum.

5 Proponatur constructio Tabulæ Horologii declinantis grad. 54. sub altitudine Poli Regionis grad. 45. colligentur tria illa inuenta, ut ibidem, sic.

Altitudo Poli supra planum	grad. 24. m. 34.
Cuius complementum erit Altitudo Equatoris	grad. 65. m. 26.
Inclinatio styli	grad. 38. m. 58.
Inclinatio Meridianorum	grad. 62. m. 49.

Altitudo enim Poli supra planum, ut habeatur, erit Analogia.

VT Radius 100000. ad grad. 54. complementi declinationis muri Sinum 58778. ita 70711. Sinus complementi Altitudinis Poli Regionis grad. 45. ad 41563. Sinum Altitudinis Poli grad. 24. m. 34. supra datum planum declinans grad. 54.

Vel Logarithmicè, iungantur complementi declinationis muri grad. 54. Logarithmus 976922
Logarithmus complementi Altitudinis Poli Regionis grad. 45. in præsentem exemplo 984949
Colligitur Logarithmus Anguli grad. 24. m. 34. Altitudinis Poli supra Planum 961871

Pro inclinatione Styli, fiet Analogismus.

VT Radius 100000. ad 80902. Sinum declinationis muri grad. 54. ita 100000. tangens latitudinis Equinoctialis grad. 45. ad 80902. tangentem anguli inclinationis styli, siue distantia lineæ substylaris à Meridiana grad. 38. m. 58.

Vel iungantur grad. 54. declinationis muri Logarithmus 990796
Mesologarithmus grad. 45. m. 0. complementi Altitudinis Poli Regionis in præsentem 100000
Fiet Mesologarithmus grad. 38. m. 58. Anguli eiusdem 990796

Angu-

Angulus tandem inclinationis Meridianorum, hac innotescet Analogia.

VT Radius 100000. ad 70711. Sinus Altitudinis Poli grad. 45. m.o. Regionis; ita 72654. tangens Anguli complementi declinationis muri grad. 54. m.o. ad 1374. tangens Anguli complementi Anguli quæsit gr. 62. m. 48. *Vel*, iunctis Mesologarit. gr. 54. complementi declinationis muri 986126 Logarithmo grad. 45. m.o. Altitudinis Poli 984949 Colligitur Mesologarithmus complem. grad. 62. m. 48. vt prius 971075 His præmissis, inueniantur Anguli Horarij, Altitudines Solis, Azimutha, & Vmbra, velut in sequentibus paragraphis.

De Angulis, siue Distantijs Horarijs.

AD Altitudinem Poli Regionis (in præsentis exemplo grad. 45.) inuentis (ex cap. 1. prax. 3. huius libri) Arcubus Semidiurnis Capricorni, grad. 64. m. 14. Equatoris grad. 90. & Cancrj, grad. 115. m. 46. Addatur singulis Inuentum tertium, grad. 62. m. 49. & vnumquodque aggregatum, erit distantia, siue Angulus Horarius hor. 24. subtractisque grad. 15. relinquetur distantia hor. 23. &c. vt in 7. prax. cap. 1. huius libri; ac in Tabella sequenti.

Hora Capricorni Orientalis	Arcus Semidiurnus Capricorni.	Hora Canceri Occidentales.	Hora Orientales.	Arcus Semidiurnus Aries, & Libra.	Hora Occidentales.	Hora Orientales.	Arcus Semidiurnus Canceri.	Hora Occidentales.
	64. 14 62. 49			90. 0 62. 49			115. 46 62. 49	
24	127. 3			152. 49			178. 35	
23	112. 3			137. 49			163. 35	
	C-----D			122. 49			148. 35	
22	97. 3			107. 49			133. 35	
21	82. 3			92. 49			118. 35	
20	67. 3	16		C-----D			103. 35	
19	52. 3	17		77. 49	17		88. 35	
18	37. 3	18	19	62. 49	18		C-----D	
17	22. 3	19	18	47. 49	19	17	73. 35	19
16	7. 3	20	17	32. 49	20	16	58. 35	20
	A-----B			15. 49	21	15	43. 35	21
15	7. 57	21	14	2. 49	22	14	28. 35	22
14	21. 57	22		A-----B			13. 35	23
13	37. 57	23	13	12. 11	23	13	A-----B	
12	52. 57	24	12	27. 11	24	12	1. 25	24
11	67. 57	25	11	42. 11	25	11	16. 25	25
10	82. 57		10	57. 11	26	10	31. 25	26
9	97. 57		9	72. 11	27	9	46. 25	27
	C-----D		8	87. 11	28	8	61. 25	28
8	112. 57					7	76. 25	29
7								

G

Cum

Cum autem grad. 15. subtrahi nequeunt, ducatur linea, A B, quæ horas post transitum styli, ab illis, quæ sunt ante ipsum, distinguet.

Tum distantia horarum superuacaneæ excludantur linea, C D, supra, & infra lineam A B. Ita, ut distantia Capricorni non excedant arcum Semidiurnum Cancræ, respondentem Altitudini Poli Muralis grad. 24. m. 34. qui Arcus ex Tabula, quæ habetur supra cap. 1. prax. 3. est grad. 101. m. 28.

Distantia verò Equatoris grad. 90. nunquam superent.

Distantia Cancræ terminentur Arcu Semidiurno Capricorni, similiter Altitudini Poli Muralis grad. 24. m. 34. respondente; qui est grad. 78. m. 32.

8 Si quis autem cupiat horas tantum pro muro declinante ad Occasum, arcubus Semidiurnis subtrahendum est *Inuentum tertium*; & reliqua peragenda, veluti pro declinante ad Ortum.

9 Idem Anguli, siue distantia horarum pro horis Italicis, deferuiunt etiam, Babylo nicis, si horæ Italicæ mutantur in sua complementa ad numerum 24. *Exempli causa*, Hora 23. Italica mutanda est in 1. Babylo nicam; 22. Italica in 2. Babylo nicam, &c.

10 Pro horis *Astronomicis*, siue Hispanicis, Gallicis, &c. distantia horæ 12. semper est *Inuentum tertium* (in præsentī exemplo grad. 62. m. 48.) aliæ ex vna parte formantur continua additione quindenorū graduum, donec summa non excedit Arcum Semidiurnum Cancræ ad Altitudinem Poli Muralis (in præsentī exemplo grad. 24. m. 34.) qui Arcus est grad. 101. m. 28. Ex altera verò parte formantur quindenorū graduum subtractione, donec fieri potest; & cum amplius quindenari subtrahi nequeunt, pro sequentibus horis fiat quindenorum additio, quoad arcum prædictum Cancræ summa non excedit. Istæ distantia deferuiunt Capricorno, Cancro, & Equatori.

11 In *Antiquis* horarijs *Inuentum tertium* supradictum grad. 62. m. 48. est distantia horæ 6. reliquæ verò distantia componuntur sicut *Astronomicæ*, additione scilicet, ac subtractione; non tamen quindenorum, sed distantia vnius horæ inæqualis inuenta, ut supra cap. 1. prax. 7. num. 7. quæ pro Capricorno est grad. 19. m. 18. & pro Cancro grad. 10. m. 42. pro Equatore autem non differunt à distantijs *Æquinoctialis* in *Astronomicis*.

Distantia Horarum Astronomicarum pro Declinante grad. 54. sub Altitudine Poli grad. 45.

	Post transitum Styli.	Hora	Grad.	M.	Hora	
Ante transitum Styli.	Hora ab Austro ad Ortum, & ab Aquilone ad Occasum.	2	92.	49	10	Hora ab Austro ad Occasum, & ab Aquilone ad Ortum.
		1	77.	49	11	
		12	62.	49	12	
		11	47.	49	1	
		10	32.	49	2	
		9	17.	49	3	
		8	2.	49	4	
			A	B		
Ante transitum Styli.	Hora ab Austro ad Ortum, & ab Aquilone ad Occasum.	7	12.	11	5	Hora ab Austro ad Occasum, & ab Aquilone ad Ortum.
		6	27.	11	6	
		5	42.	11	7	
		4	57.	11	8	
		3	72.	11	9	
		2	82.	11	10	
		1	97.	11	11	

De Calculo Altitudinum in Communi.

¹² Q Vonia latera trianguli horarij, scilicet latus maius, quod in præsen-
ti est complementum declinationis Solis grad. 66. m. 30. & latus mi-
nus grad. 65. m. 26. quod est Altitudo Æquatoris supra planum decli-
nans, simul iuncta sunt quadrante maiora, nempe grad. 135. m. 56. ideo per
Tertium casum cap. 1. prax. 8. huius libri; ita calculi trium priorum funda-
mentalium Inuentorum disponitur.

	I G.	M. I	Sinus
Crus minus, Altitudo Æquatoris muralis	I 65.	26 I	
Compl. Cruris maioris, declinatio Tropicorum	I 23.	30 I	
Aggregatum, cuius Sinus, est Inuentum I.	I 88.	56 I	99983
Differentia	I 41.	56 I	66826
Sinum aggregatum	I		166809
Aggregati Semissis, Inuentum II.	I		83404
Idem sublatum ab Inuento I. Inuentum III.	I	I	16579

¹³ Nota. Quando aggregatum ex Altitudine Æquatoris, & declinatione
parallelorum, grad. 90. excedit, accipitur Sinus complementi illius ad gr.
180. vt infra prax 8. num. 4.

*Specialis Calculus Altitudinum, & Azimuthorum Ca-
pricorni pro Tabula vtriusque Horarij, declinantis
ad Ortum grad. 54. & Cancrī pro declinante
ijsdem gradibus ad Occasum.*

¹⁴ H Abitis Logarithmo Inuenti secundi omnibus horis communi 992119.
Inuenti tertij Sinu 16579. & Inuento quarto, nempe angulis singularum
horarum, per numerum 11. & 12. superioris praxis, proceditur ad inquirendum
Inuentum quintum, ac sextum, ijsdem seruatis compendijs, & respondentia ho-
rarum, in eodem Tropico, vel in opposito.

Si enim distantia, siue Angulus Horarius excedit quadrantem, & id ò in cal-
culo Inuenti quinti, assumitur Logarithmus excessus; vt habeas Inuentum sex-
tum Tropici Capricorni declinantis ad Ortum, Inuento tertio subtrahendum est
quintum; addendum autem pro Inuento sexto alterius horæ correspondentis in
eodem Tropico Capricorni; ita, vt horæ nonæ, respondeat hora vigesima
prima; horæ decimæ, hora vigesima secunda; horæ vndecimæ, hora vige-
sima tertia, &c.

G 2 Sin

quæ horas

, supra, &
cum Semi-
m. 34. qui
m. 28., similiter
78. m. 32.
casum, ar-
peragenda,ant etiam
nerum 24.
2. Italica inmicarum
Alti-

Hora

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Sin verò Angulus horarius quadrantem non excedit: quare, vt in prædicto calculo acceptus fuit Anguli horarii Logarithmus secundus; tùm pro Inuentio sexto horæ Capricorni quæsitæ, tertio Inuento addendum est quintum; subtrahendum autem pro alia hora eidem respondente. Quæ quidem respondebit, vel in eodem parallelo, vt modo dixi, vel in alio opposito. In eodem, si Inuentum quintum, tertio maius est; vt in calculo horæ decimæ Capricorni Orientalis; in opposito, si minus; vt in calculo horæ vndecimæ eiusdem Tropici Capricorni: Vbi summa Inuenti quinti, & tertij dat Inuentum sextum, idest Sinum Altitudinis ipsius horæ vndecimæ ad Ortum; Differentia autem præbet Inuentum sextum horæ vigesimæ quintæ Cancræ, pro declinante Occidentali. Sic horæ duodecimæ Capricorni Orientalis, respondet hora vigesima quarta Cancræ, in Occidentali; & horæ decimæ tertie Capricorni, hora vigesima tertia Cancræ; horæ decimæ quartæ, hora vigesima secunda; horæ decimæ quintæ, hora vigesima prima, &c. Ita nimirum, vt simul efficiant horas

Calculi Altitudinum, Vmbrarum, & Azimuthorum Capricorni

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M P. M.	Vmbræ
9. & 21	7. 57	Excessus dist. gr. 75. Logar. 1. 914085 Logar. Inu. secundi communis *992119 Summa, Logar. Inuenti quinti 906204	*16579 11523		
		Differentia Sinuū, Altitudinis horæ 9. 70	5056	2. 54	236. 54
		Summa, Sin. Altitud. horæ 21. 70 Orient.	28102	16. 19	41. 0
10. & 22	82. 57	Logarithmus secundus 908897 Logarit. communis Inuenti 2. *992119 Summa, Logar. Inuenti quinti 901016	*16579 10279		
		Summa, Sinus Altit. horæ 10. 70 Orient.	26858	15. 31	43. 2
		Differentia, Sin. Altit. horæ 22. 70 Occid.	6300	3. 37	189. 51
11	67. 57	Logarithmus secundus 957451 Logarithmus communis *992119 Summa, Logar. Inuenti quinti 949570	*16579 31319		
		Summa, Sinus Altit. horæ 11. 70 Orient.	47898	28. 37	22. 0
		Differentia, Sin. Altit. horæ 25. 25 Occid.	14740	8. 29	80. 27
					58.

triginta sex. In quo observanda est differentia huius calculi, à calculis Horizontalium, & Verticalium, directè meridiem aspicientium. Neque enim in calculo declinantium horarè respondens in opposito parallelo ad eandem Tabulam Gnomonicam pertinet, sed ad Tabulam oppositæ declinationis. Quamobrem supputando Altitudines Capricorni pro declinante ad Ortum, habentur simul Altitudines Cancrì pro declinante ad Occasum; & è conuerso, eadem supputatione Altitudinum Cancrì pro declinante Orientali, patescunt Altitudines etiam Capricorni Occidentalis; seruata tamen methodo additionis, vel subtractionis Inuenti tertij.

De Vmbrarum calculo nihil est addendum. Supputantur enim semper, & vbique vna, & eadem methodo, quæ praxi nona superioris capitis tradita est.

Idem Azimutha eadem semper regula calculo exarantur, quæ habetur in capite præcedenti, praxi decima; Ita tamen, vt aliter supputentur in parallelo extra Æquatorem, & aliter in ipso Æquatore, vt ibidem explicauimus.

ad Ortum, & Cancrì ad Occasum paradigmata.

ud. Vmbræ M. P. M.		Logarith. & Tomologar.
		Logarithmus anguli complementi vsque ad 180. Arcus 82. m. 3.
		Logarithmus complementi declinationis Solis gr. 23. m. 30. Generalis
		Tomologarithmus Altitudinis horæ 9. 70. grad. 2. m. 54.
54	236. 54	Summa, Logarith. Azimuth horæ 9. 70. grad. 65. m. 25. Arcus 153. m. 33.
19	41. 0	Tomologarithmus horæ 21. 70
		Logarith. Azimuth horæ 21. dictæ, grad. 71. m. 9. Arcus grad. 290. m. 7.
		Logarithmus primus distantie
		Logarithmus Generalis
		Tomologarithmus Altitudinis horæ 10. 70. grad. 15. m. 35.
35	43. 2	Summa, Logarith. Azimuth horæ 10. 70. gr. 70. m. 53. Arcus gr. 148. m. 5.
37	189. 51	Tomologarithmus horæ 22. 70. Altitudinis grad. 3. m. 37.
		Logarith. Azimuth horæ 22. 70. grad. 65. m. 46. Arcus grad. 284. m. 44.
		Logarithmus primus distantie
		Logarithmus Generalis
		Tomologarithmus horæ 11. 70. cuius Altitudinis grad. 28. m. 37.
37	22. 0	Summa, Logarith. Azimuth horæ 11. 70. gr. 75. m. 31. Arcus 143. m. 27.
29	80. 27	Tomologarithmus horæ 25. 20. cuius Altitudinis grad. 8. m. 29.
		Summa, Logarith. Azimuth horæ 25. 20. gr. 59. m. 15. Arcus gr. 261. m. 47.
	Se-	Se-

Sequuntur calculi Altitudinum, Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad.	Logarithmi secundi	Sinus	Altitud. Gr. M. P. M.	Vmbræ M.
12	52. 57	Logarithmus secundus 977996			
		Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 970115	50226		
		Summa, Sinus Altit. horæ 12. 70 Orient.	66805	41. 55	13. 22
13	37. 57	Logarithmus secundus 989683			
		Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 981802	65781		
		Summa, Sinus Altit. horæ 13. 70 Orient.	82360	55. 27	8. 16
14	22. 57	Logarithmus secundus 996419			
		Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 988538	76791		
		Summa, Sinus Altit. horæ 14. 70 Orient.	93370	69. 2	4. 36
15	7. 57	Logarithmus secundus 995580			
		Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 991699	82593		
		Summa, Sinus Altit. horæ 15. 70 Orient.	99172	82. 37	1. 33
16	7. 3	Logarithmus secundus 999670			
		Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 991789	82773		
		Summa, Sinus Altit. horæ 16. 70 Orient.	99352	83. 29	1. 22
		Differentia, Sin. Altit. horæ 20. 25 Occid.	66194	41. 27	13. 35

Se-

Capricorni ad Ortum, & Cancri ad Occasum paradigmata.

uthorum

d. Vmbræ
M. P. M.

35 13. 22

40 33. 35

27 8. 16

32 21. 11

2 4. 36

1 15. 55

37 1. 33

19 13. 39

29 1. 22

27 13. 35

Se-

Logarith. &
Tomo'logar.

Logarithmus primus distantie

990206

Logarithmus Generalis

*996240

Tomologarithmus Altitudinis horæ 12. 70, grad. 41. m. 55.

12836

Summa, Logar. Azimuth horæ 12. 70, gr. 79. m. 37. Arcus gr. 139. m. 21.

999282

Tomologarithmus Altitudinis horæ 24. 26, grad. 19. m. 40.

2610

Summa, Logarith. Azimuth horæ 24. 26, grad. 51. m. 1. Arcus 270. m. 0.

989056

Logarithmus primus

978886

Logarithmus Generalis

*996240

Tomologarithmus Altitudinis horæ 13. 70, grad. 55. m. 27.

24632

Summa, Logar. Azimuth horæ 13. 70, grad. 83. m. 58. Arcus gr. 135. m. 0.

999718

Tomologarithmus Altitudinis horæ 23. 26, grad. 29. m. 32.

6045

Summa, Logarith. Azimuth horæ 23. 26, gr. 40. m. 25. Arcus gr. 280. m. 37.

981171

Logarithmus primus

959098

Logarithmus Generalis

*996240

Tomologarithmus Altitudinis horæ 14. 70, grad. 69. m. 2.

44633

Summa, Logarith. Azimuth horæ 14. 70, gr. 87. m. 55. Arcus gr. 131. m. 3.

999971

Tomologarithmus Altitudinis horæ 22. 26, grad. 37. m. 1.

9775

Summa, Logar. Azimuth horæ 22. 26, gr. 26. m. 36. Arcus grad. 24. m. 26.

965113

Logarithmus primus

914085

Logarithmus Generalis

*996240

Tomologarithmus Altitudinis horæ 15. 70, grad. 82. m. 37.

89107

Summa, Logar. Azimuth horæ 15. 70, gr. 80. m. 45. Arcus gr. 119. m. 41.

999432

Tomologarithmus Altitudinis horæ 21. 26, grad. 41. m. 19.

12431

Summa, Logar. Azimuth horæ 21. 26, grad. 9. m. 43. Arcus gr. 311. m. 19.

922756

Logarithmus primus

508897

Logarithmus Generalis

*996240

Tomologarithmus Altitudinis horæ 16. 70, grad. 83. m. 29.

94503

Summa, Logar. Azimuth horæ 16. 70, gr. 82. m. 38. Arcus gr. 316. m. 20.

999640

Tomologarithmus Altitudinis horæ 20. 26, grad. 41. m. 27.

12. 22

Summa, Logar. Azimuth horæ 20. 26, grad. 8. m. 38. Arcus gr. 329. m. 40.

917658

Se.

Sequuntur calculi Altitudinum Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.	vmbræ P. M.
17	22. 3	Logarithmus secundus 996701 Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 988820	77310		
		Summa, Sinus Altit. horæ 17. 70 Orient.	93889	69. 52	4. 24
		Differentia, Sin. Altit. horæ 19. 26 Occid.	60731	37. 24	15. 42
18	37. 3	Logarithmus secundus 990206 Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 982325	66566		
		Summa, Sinus Altit. horæ 18. 22 Orient.	83145	56. 15	8. 1
		Differentia, Sin. Altit. horæ 18. 26 Occid.	49987	29. 59	20. 48
19	52. 3	Logarithmus secundus 978886 Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 971005	51279		
		Summa, Sinus Altit. horæ 19. 70 Orient.	67858	42. 44	12. 50
		Differentia, Sin. Altit. horæ 17. 26 Occid.	34700	20. 18	32. 26
20	67. 3	Logarithmus secundus 959098 Logarithmus communis *992119	*16579		
		Summa, Logar. Inuenti quinti 951217	32529		
		Summa, Sinus Altit. horæ 20. 70 Orient.	49108	29. 25	21. 17
		Differentia, Sin. Altit. horæ 16. 26 Occid.	15950	9. 11	74. 14

Speciales calculi Altitudinum, Umbrarum, & Azimuthorum

Hic pro *Invento sexto* Cancrī ad Ortum, & *Inuentis quinto*, & *Tertio* subtrahe minus maiori; & pro Capricorno ad Occasum vtrumque collige, nisi Angulus Horarius quadrantem excedit; nam tali casu contraria methodus adhibenda est.

Cor-

Capricorni ad Ortum, & Cancri ad Occasum paradigma.

nuthorum

id. Vmbræ
M. P. M.

52	4. 24
24	15. 42
15	8. 1
59	20. 48
44	12. 59
18	32. 26
25	21. 17
11	74. 14

	Logarith. & Tomologar.
Logarithmus primus	957451
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis horæ 17. 70 grad. 69. m. 52.	46318
Summa, Logar. Azimuth horæ 17. 70 grad. 88. m. 50. Arcus gr. 310. m. 8.	999991
Tomologarithmus Altitudinis horæ 19. 22 grad. 37. m. 24.	9995
Summa, Logar. Azimuth horæ 19. 22 grad. 25. m. 41. Arcus gr. 346. m. 43.	963686
Logarithmus primus	977996
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis horæ 18. 70 grad. 56. m. 15.	25526
Summa, Logar. Azimuth horæ 18. 70 grad. 84. m. 1. Arcus gr. 302. m. 59.	999742
Tomologarithmus Altitudinis horæ 18. 22 grad. 29. m. 59.	6240
Summa, Logar. Azimuth horæ 18. 22 grad. 39. m. 38. Arcus grad. 0. m. 40.	980476
Logarithmus primus	989683
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis horæ 19. 70 grad. 42. m. 44.	13400
Summa, Logar. Azimuth horæ 19. 70 grad. 79. m. 51. Arcus gr. 298. m. 53.	999323
Tomologarithmus Altitudinis horæ 17. 22 grad. 20. m. 18.	2785
Summa, Logar. Azimuth horæ 17. 22 grad. 50. m. 27. Arcus gr. 111. m. 29.	988708
Logarithmus primus	996419
Logarithmus Generalis	*996240
Tomologarithmus Altitudinis horæ 20. 70 grad. 29. m. 25.	5995
Summa, Logar. Azimuth horæ 20. 70 grad. 75. m. 49. Arcus gr. 294. m. 47.	998654
Tomologarithmus Altitudinis horæ 16. 22 grad. 9. m. 11.	560
Summa, Logar. Azimuth horæ 16. 22 grad. 58. m. 48. Arcus gr. 19. m. 50.	993219

Cancri declinantis ad Ortum, & Capricorni ad Occasum.

Correspondentia Horarum Cancri Orientalis, & Capricorni Occidentalis; eadem est, ac Horarum Capricorni Orientalis, & Cancri Occidentalis; nempe, vt simul compleant numerum triginta sex.

orum

Tertio sub
imque col-
a contraria

Cor-

H

Cal-

Calculi Altitudinum, Vmbrarum, & Azimut horum Cancræ

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.	Vmbræ P. M.
7	76. 25	Logarithmus secundus 937081	*16579		
		Logarithmus communis *992119			
		Summa, Logar. Inuenti quinti 929200			
		Differentia, Sin. Altit. horæ 7. 25 Orient.		1. 44	396. 28
		Summa, Sinus Altit. horæ 29. 70 Occid.	36174	21. 12	30. 56
8	61. 25	Logarithmus secundus 967982	*16579		
		Logarithmus communis *992119			
		Summa, Logar. Inuenti quinti 960101			
		Differentia, Sin. Altit. horæ 8. 25 Orient.		13. 30	49. 59
		Summa, Sinus Altit. horæ 28. 70 Occid.	59507	34. 24	17. 32
9	46. 25	Logarithmus secundus 983848	*16579		
		Logarithmus communis *992119			
		Summa, Logar. Inuenti quinti 975963			
		Differentia, Sin. Altit. horæ 9. 25 Orient.		24. 9	26. 46
		Summa, Sinus Altit. horæ 27. 70 Occid.	74079	47. 48	10. 53
10	31. 25	Logarithmus secundus 993115	*16579		
		Logarithmus communis *992119			
		Summa, Logar. Inuenti quinti 985234			
		Differentia, Sin. Altit. horæ 10. 25 Orient.		33. 6	18. 24
		Summa, Sinus Altit. horæ 26. 70 Occid.	87761	61. 21	6. 33
11	16. 25	Logarithmus secundus 998192	*16579		
		Logarithmus communis *992119			
		Summa, Logar. Inuenti quinti 990311			
		Differentia, Sin. Altit. horæ 11. 25 Orient.		39. 22	14. 38
		Summa, Sinus Altit. horæ 25. 70 Occid.	96582	74. 59	3. 13

Se-

ad Ortum, & Capricorni ad Occasum paradigmata.

ancr

ud. Vmbræ
M. P. M.

44 396. 28

12 30. 56

30 49. 59

24 17. 32

9 26. 46

48 10. 53

6 18. 24

21 6. 33

22 14. 38

59 3. 13

Se-

		Logarith. & Tomoogar.
Logarithmus primus		998768
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 7. 25. grad. 1. m. 44.		20
Summa, Logar. Azimuth horæ 7. 25. gr. 63. m. 6. Arcus gr. 113. m. 4.		995028
Tomologarithmus Altitudinis horæ 29. 70. grad. 21. m. 12.		3043
Summa, Logar. Azimuth horæ 29. 70. grad. 72. m. 58. Arcus 214. m. 0.		998051
Logarithmus primus		994355
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 8. 25. grad. 13. m. 30.		917
Summa, Logar. Azimuth horæ 8. 25. grad. 55. m. 53. Arcus gr. 94. m. 53.		991512
Tomologarithmus Altitudinis horæ 28. 70. grad. 34. m. 24.		9491
Summa, Logar. Azimuth horæ 28. 70. gr. 77. m. 43. Arcus gr. 218. m. 45.		999914
Logarithmus primus		985996
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 9. 25. grad. 24. m. 9.		3978
Summa, Logar. Azimuth horæ 9. 25. gr. 46. m. 43. Arcus gr. 85. m. 41.		986214
Tomologarithmus Altitudinis horæ 27. 70. grad. 47. m. 48.		17281
Summa, Logar. Azimuth horæ 27. 70. gr. 81. m. 28. Arcus gr. 222. m. 30.		999517
Logarithmus primus		971705
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 10. 25. grad. 33. m. 6.		7690
Summa, Logar. Azimuth horæ 10. 25. gr. 34. m. 48. Arcus gr. 73. m. 46.		975635
Tomologarithmus Altitudinis horæ 26. 70. grad. 61. m. 21.		31925
Summa, Logar. Azimuth horæ 26. 70. gr. 85. m. 34. Arcus gr. 226. m. 36.		999870
Logarithmus primus		945120
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 21. 25. grad. 39. m. 22.		11176
Summa, Logar. Azimuth horæ 11. 25. gr. 19. m. 35. Arcus gr. 58. m. 33.		952536
Tomologarithmus Altitudinis horæ 25. 70. grad. 74. m. 59.		58606
Summa, Logar. Azimuth horæ 25. 70. gr. 87. m. 45. Arcus gr. 233. m. 17.		999066

H 2 Se.

Sequuntur calculi Altitudinum Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad. M.	Logarithmi secundi	Sinus	Altitud. Gr. M.	Vmbræ P. M.
12	1. 25	Logarithmus secundus	999987		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	992106	83372	
		Differentia, Sin. Altit. horæ 12.25 Orient.	67793	42. 41	13. 1
13	13. 35	Logarithmus secundus	998768		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	990887	81072	
		Differentia, Sin. Altit. horæ 13.25 Orient.	64493	40. 9	14. 14
14	28. 35	Logarithmus secundus	994355		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	986474	74234	
		Differentia, Sin. Altit. horæ 14.25 Orient.	56655	34. 30	17. 28
15	43. 35	Logarithmus secundus	985996		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	978115	60413	
		Differentia, Sin. Altit. horæ 15.25 Orient.	43834	26. 0	24. 36
16	58. 35	Logarithmus secundus	971705		
		Logarithmus communis	*992119		
		Summa, Logar. Inuenti quinti	963828	43471	
		Differentia, Sin. Altit. horæ 16.25 Orient.	26892	15. 36	42. 59
		Summa, Sinus Altit. horæ 20. 70 Occid.	60050	36. 54	15. 59

Se-

nuthorum

Canceri ad Ortum, & Capricorni ad Occasum paradigma.

ud. Vmbræ
M. P. M.

			Logarith. & Tomologar.
		Logarithmus primus distantia	839310
		Logarithmus Generalis	*996240
		Tomologarithmus Altitudinis horæ 12. 22, grad. 42. m. 41.	13365
41	13. 1	Summa, Logarith. Azimuth horæ 12. 22, gr. 1. m. 46. Arcus gr. 40. m. 44.	848915
		Tomologarithmus Altitudinis horæ 24. 70, grad. 88. m. 16.	150292
16	0. 22	Summa, Logar. Azimuth horæ 24. 70, gr. 46. m. 12. Arcus gr. 270. m. 0.	985842
		Logarithmus primus distantia	937081
		Logarithmus Generalis	*996240
		Tomologarithmus Altitudinis horæ 13. 22, grad. 40. m. 9.	11670
9	14. 14	Summa, Logarith. Azimuth horæ 13. 22, gr. 16. m. 22. Arcus gr. 22. m. 36.	944991
		Tomologarithmus Altitudinis horæ 25. 70, grad. 77. m. 38.	66638
33	2. 39	Summa, Logar. Azimuth horæ 25. 70, gr. 87. m. 31. Arcus gr. 48. m. 33.	999959
		Logarithmus primus	967982
		Logarithmus Generalis	*996240
		Tomologarithmus Altitudinis horæ 14. 22, grad. 34. m. 30.	8401
30	17. 28	Summa, Logarith. Azimuth horæ 14. 22, gr. 32. m. 10. Arcus gr. 6. m. 42.	972623
		Tomologarithmus Altitudinis horæ 22. 70, grad. 63. m. 54.	35661
54	5. 53	Summa, Logar. Azimuth horæ 22. 70, gr. 85. m. 48. Arcus gr. 15. m. 16.	999883
		Logarithmus primus	983848
		Logarithmus Generalis	*996240
		Tomologarithmus Altitudinis horæ 15. 22, grad. 26. m. 0.	4634
0	24. 36	Summa, Logar. Azimuth horæ 15. 22, gr. 44. m. 42. Arcus gr. 354. m. 15.	984722
		Tomologarithmus Altitudinis horæ 21. 70, grad. 50. m. 26.	19588
26	9. 55	Summa, Logar. Azimuth horæ 21. grad. 83. m. 0. Arcus grad. 58. m. 2.	999676
		Logarithmus primus	993115
		Logarithmus Generalis	*996240
		Tomologarithmus Altitudinis horæ 16. grad. 15. m. 36.	1630
36	42. 59	Summa, Logar. Azimuth horæ 16. gr. 54. m. 21. Arcus gr. 344 m. 37.	990985
		Tomologarithmus Altitudinis horæ 20. grad. 36. m. 54.	9708
54	15. 59	Summa, Logarith. Azimuth horæ 20. grad. 78. m. 9. Arcus gr. 62. m. 53.	999063
	Se-		Se-

Sequuntur calculi Altitudinum, Vmbrarum, & Azimuthorum

Hora	Distantia Grad. M.	Logarithmi secundi	Sinus	Altitud. Vmbræ Gr. M. P. M.
17	73. 35	Logarithmus secundus	945120	
		Logarithmus communis	*992119	*16579
		Summa, Logar. Inuenti quinti	937239	23571
		Differentia, Sin. Altit. hor. 17. ϖ Orient.	6992	4. 0 171.37
		Summa, Sinus Altit. horæ 19. ϖ Occid.	40150	23. 40 27.23
18	88. 35	Logarithmus secundus	839310	
		Logarithmus communis	*992119	*16579
		Summa, Logar. Inuenti quinti	831429	2065
		Summa, Sinus Altit. horæ 18. ϖ Occid.	18644	10. 45 63.12
		Differentia, Sin. Altit. horæ 30. ϖ Occid.	14514	8. 21 81.46
19	13. 35	Logarithmi excessus	937081	
		Logarithmus communis	*992119	*16579
		Summa, Logar. Inuenti quinti	929200	19595
		Differentia, Sin. Altit. horæ 19. ϖ Occid.	3016	1. 44 396.38
		Summa, Sinus Altit. horæ 19. ϖ Occid.	36174	21. 49 29.59

Speciales calculi Altitudinum,

Logarithmus Altitudinis Æquatoris colligitur ex Logarithmo secundo Anguli horarij, & Logarithmo primo Altitudinis Æquatoris, in muro declinante (modo grad. 65. m. 26.) cuius Logarithmus est 995879.0 m.

8	87. 11	Logarithmus secundus anguli	869144	
		Logarithm. Altitud. Æquator. Mural.	*995879	
		Summa, Logar. Altit. h. 8. Or. & 28. Occ.	865023	2. 34 267.42
9	72. 11	Logarithmus secundus	948568	
		Logarithmus communis	*995879	
		Summa, Logar. Altit. h. 9. Or. & 27. Occ.	944447	16. 9 41. 26

Se.

Capricorni ad Ortum, & Cancri ad Occasum paradigma.

		Logarithmi, & Tomologar.
Logarithmus primus		998192
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 17. grad. 4. m. 0.		106
0	171.37	Summa, Logar. Azimuth horæ 17. grad. 61. m. 51. Arcus grad. 337. m. 7.
Tomologarithmus Altitudinis horæ 19. grad. 23. m. 40.		3815
40	27.23	Summa, Logar. Azimuth horæ 19. grad. 73. m. 50. Arcus grad. 67. m. 12.
Logarithmus primus		999987
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 18. Occident. grad. 10. m. 45.		769
45	63.12	Summa, Logar. Azimuth horæ 18. Occid. gr. 68. m. 56. Arcus gr. 72. m. 6.
Tomologarithmus Altitudinis horæ 30. grad. 8. m. 21.		463
21	81.46	Summa, Logar. Azimuth horæ 30. grad. 67. m. 55. Arcus grad. 208. m. 57.
Logarithmus complementi excessus grad. 13. m. 35.		998768
Logarithmus Generalis		*996240
Tomologarithmus Altitudinis horæ 19. grad. 1. m. 44.		20
44	396.38	Summa, Logar. Azimuth horæ 19. grad. 63. m. 6. Arcus grad. 77. m. 56.
Tomologarithmus Altitudinis horæ 29. grad. 21. m. 49.		3227
49	29.59	Summa, Logar. Azimuth horæ 29. grad. 73. m. 47. Arcus grad. 214. m. 49.
		998235

& Azimuth Horarum Aequatoris.

nibus horis communis.

Eadem Altitudo, & idem Azimuth vtriusque Tabulis, Orientalis scilicet, & Occidentali deferuit; ad num. 36.

Logarithmus primus distantiae		999947
Tomologarithmus Altitudinis grad. 2. m. 34.		43
34	267.42	Summa, Log. Azimuth gr. 88. m. 48. } Arcush. 8. Orient. gr. 127. m. 43.
		999990
Logarithmus primus		997865
Tomologarithmus Altitudinis grad. 16. m. 9.		1749
9	41.26	Summa, Log. Azimuth gr. 82. m. 23. } Arcush. 9. Orient. gr. 121. m. 21.
		999614
		Se.

Sequuntur Calculi Altitudinum, Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad. M.		Logarithmi secundi	Altitud. Gr. M.	Vmbræ P. M.
10	57. 11	Logarithmus secundus anguli Logarithmus Altit. Equator. Mural.	973396 *995879		
		Summa, Log. Altit. h. 10. Or. & 26. Occ.	969275	29. 32	21. 11
11	42. 11	Logarithmus secundus Logarithmus communis	986982 *995879		
		Summa, Log. Altit. h. 11. Or. & 25. Occ.	982861	42. 22	13. 9
12	27. 11	Logarithmus secundus Logarithmus communis	994917 *995879		
		Summa, Log. Altit. h. 12. Or. & 24. Occ.	990796	54. 0	8. 43
13	12. 11	Logarithmus secundus Logarithmus communis	999011 *995879		
		Summa, Log. Altit. h. 13. Or. & 23. Occ.	994890	62. 45	6. 11
14	2. 49	Logarithmus secundus Logarithmus communis	999947 *995879		
		Summa, Log. Altit. h. 14. Or. & 22. Occ.	995826	65. 17	5. 31
15	17. 49	Logarithmus secundus Logarithmus communis	997865 *995879		
		Summa, Log. Altit. h. 15. Or. & 21. Occ.	993744	59. 59	6. 56
16	32. 49	Logarithmus secundus Logarithmus communis	992449 *995879		
		Summa, Log. Altit. h. 16. Or. & 20. Occ.	988328	49. 51	10. 7
17	47. 49	Logarithmus secundus Logarithmus communis	982705 *995879		
		Summa, Log. Altit. h. 17. Or. & 19. Occ.	978584	37. 38	15. 34
18	62. 49	Logarithmus secundus Logarithmus communis	965976 *995879		
		Summa, Log. Altit. h. 18. Or. & 18. Occ.	961855	24. 33	26. 16

uthorum

Aequatoris ad Ortum, & ad Occasum paradigmata.

itud. Vmbrz M. P. M.			Logarith. & Tomologar.
		Logarithmus primus distantiae	992449
		Tomologarithmus Altitudinis grad. 29. m. 12.	6045
2. 32	21. 11	Summa, Log. Azimuth gr. 75. m. 0. } Arcush. 10. Orient. gr. 113 m. 58. } Arcush. 26. Occid. gr. 246. m. 2.	998494
		Logarithmus primus	982705
		Tomologarithmus Altitudinis grad. 42. m. 22.	13144
2. 22	13. 9	Summa, Log. Azimuth gr. 65. m. 20. } Arcush. 11. Orient. gr. 104 m. 18. } Arcush. 25. Occid. gr. 255. m. 42.	995849
		Logarithmus primus	565976
		Tomologarithmus Altitudinis grad. 54. m. 0.	23078
4. 0	8. 43	Summa, Log. Azimuth gr. 51. m. 0. } Arcush. 12. Orient. gr. 90. m. 0. } Arcush. 24. Occid. gr. 270. m. 0.	989054
		Logarithmus primus	932436
		Tomologarithmus Altitudinis grad. 62. m. 45.	33925
2. 45	6. 11	Summa, Log. Azimuth gr. 27. m. 27. } Arcush. 13. Orient. gr. 66. m. 25. } Arcush. 23. Occid. gr. 293. m. 35.	966361
		Logarithmus primus	869144
		Tomologarithmus Altitudinis grad. 65. m. 17.	37869
55. 17	5. 31	Summa, Log. Azimuth gr. 6. m. 45. } Arcush. 14. Orient. gr. 32. m. 13. } Arcush. 22. Occid. gr. 327. m. 47.	907013
		Logarithmus primus	948568
		Tomologarithmus Altitudinis grad. 59. m. 59.	30081
59. 59	6. 56	Summa, Log. Azimuth gr. 37. m. 42. } Arcush. 15. Orient. gr. 1. m. 16. } Arcush. 21. Occid. gr. 368. m. 44.	978649
		Logarithmus primus	973396
		Tomologarithmus Altitudinis grad. 49. m. 51.	19118
49. 51	10. 7	Summa, Log. Azimuth gr. 57. m. 12. } Arcush. 16. Orient. gr. 341. m. 46. } Arcush. 20. Occid. gr. 18. m. 14.	992454
		Logarithmus primus	986982
		Tomologarithmus Altitudinis grad. 37. m. 38.	10131
37. 38	15. 34	Summa, Log. Azimuth gr. 69. m. 20. } Arcush. 17. Orient. gr. 129. m. 38. } Arcush. 19. Occid. gr. 30. m. 22.	997113
		Logarithmus primus	994917
		Tomologarithmus Altitudinis grad. 24. m. 33.	4115
24. 33	26. 16	Summa, Log. Azimuth gr. 77. m. 57. } Arcush. 18. Orient. gr. 321. m. 1. } Arcush. 18. Occid. gr. 38. m. 59.	999032

I

Se.

Sequuntur calculi Altitudinum, Vmbrarum, & Azimuthorum

Horæ	Distantiæ Grad. M.	Logarithmi Altitud. Vmbræ secundi (Gr. M. P. M.)			
		Logarithmus secundus anguli	932436		
19	77. 49	Logarithm. Altitud. Equator. Mural.	*995879		
		Summa, Logar. Altit. h. 8. Or. & 28. Occ.	928315	11.	4 61. 21

Arcus Peripheriæ pro declinantibus ab Austro. & ab Aquilone ad Ortum componere.

17 **P**ro horis Capricorni (ex doctrina num. 10. praxis 1. huius libri) duplex casus effertur.

Primus, quando Altitudo Equatoris plani est maior grad. 23. m. 30. & minor grad. 66. m. 30. ut in presenti exemplo, ubi talis Altitudo, ex num. 5. huius praxis, est grad. 65. m. 26.

18 *Secundus casus* est, quando Altitudo Equatoris plani excedit gr. 66. m. 30. In primo casu, ex Tabula Arcuum Semidiurnorum accipitur Arcus Capricorni respondens Altitudini Equatoris supra planum, non secus, ac si esset Altitudo Poli. Ut in nostro exemplo grad. 17. m. 6. quantus est Arcus, qui sumpta differentia proportionali, more Astronomico, respondet Altitudini prædictæ grad. 65. m. 26.

Tum pro horis ante lineam styli maioris distantia à Meridiano, quam Arcus ipse grad. 17. m. 6. subtrahere Azimuth gradibus 180. & residuo adde inclinationem Styli summa erit Arcus quæsitus Peripheriæ.

Exemplum; Quia horæ 9. Capricorni distantia à Meridiano est grad. 97. m. 59. subtrahere eius Azimuth grad. 65. m. 25. gradibus 180. relinquitur differentia grad. 114. m. 35. cui addita inclinatione Styli supra num. 5. inuenta grad. 38. m. 58. colligitur Arcus quæsitus grad. 153. m. 33. collocandus in Tabula e regione hor 9. in columna arcuum Capricorni.

Pro iisdem autem horis minoris distantia à Meridiano, quam Arcus grad. 17. m. 6. additis simul Azimuth, & inclinatione Meridianorum, emerget Arcus Peripheriæ quæsitus.

Exemplum, sit hora 15. cuius distantia Meridiana cum sit grad. 7. m. 57. quippe minor Arcu grad. 17. m. 6. illius Azimuth grad. 80. m. 45. additum inclinationis Styli grad. 38. m. 58. tribuit Arcum Peripheriæ grad. 119. m. 43.

Atqui post transitum lineæ substylaris, si hora sit distantia minoris, quam Arcus prædictus, subtrahere Azimuth gradibus 360. & residuo adde inclinationem styli, colliges Arcum Peripheriæ; dummodo hæc summa grad. 360. non excedat; quod si excedat, abijce grad. 360. & residuum erit idem Arcus quæsitus.

Exem-

Æquatoris ad Ortum, & ad Occasum paradigma.

	Logarithmi, & Tomologar.
Logarithmus primus	999011
Tomologarithmus Altitudinis grad. 11. m. 4.	815
Summa, Log. Azimuth gr. 84. m. 53. } Arcush. 19. Orient gr. 314. m. 5.	999826
	Arcush. 17. Occid. gr. 45. m. 55.

Exemplum. Quoniam horæ 16. Capricorni distantia est grad. 7. m. 3. scilicet minor Arcu grad. 17. m. 6. subtrahe eius Azimuth grad. 82. m. 38. gradibus 360. & relinquentur grad. 277. m. 22. Ijs adde inclinationem Styli grad. 38. m. 58. & colliges grad. 316. m. 20. pro Arcu Peripheriæ quæsito.

Sin autem distantia sit maior Arcu prædicto, addantur simul Azimuth, inclinatio Styli, & Semicirculus grad. 180. nam summa inde collecta erit Arcus in columna Capricorni collocandus.

Exempla patent in horis 17. 18. 19. &c.

¹⁹ *In secundo casu, nulla habita ratione distantiae, pro Arcubus Peripheriæ omnium horarum ante transitum lineæ substylaris Azimutha subtrahantur Semicirculo grad. 180. post transitum verò addantur; insuper adiecta semper inclinatione styli.*

Exemplum primum. In plano declinante grad. 56. Altitudo Æquatoris est grad. 66. m. 43. Inclinatio Styli grad. 39. m. 39. Quæritur Arcus Peripheriæ horæ 9. Capricornis quæ est ante transitum lineæ substylaris: Subtrahe Azimuth illius grad. 66. m. 0. Semicirculo grad. 180. relinquantur grad. 114. m. 0. His adijce Styli inclinationem gr. 39. m. 39. colliges arcum grad. 153. m. 39.

Exemplum secundum. In eodem plano. Quæritur Arcus horæ 20. quæ contingit post transitum Styli. Iungantur simul Azimuth eiusdem horæ grad. 74. m. 40. grad. 180. & inclinatio Styli gr. 39. m. 39. colligentur gr. 294. m. 19.

Pro horis Æquatoris, & Cancræ.

²⁰ **A**nte transitum lineæ Styli adduntur Azimutha tantum inclinationi Styli: post verò subtrahuntur gradibus 360. & residuo additur inclinatio Styli; abiectis gradibus 360. si summa excedat, ut supra.

Arcus eosdem Peripheriæ conficere pro declinantibus ab Austro, & ab Aquilone ad Occasum.

²¹ **O**mnia peragantur sicut in declinantibus ad Ortum; hoc vno excepto, ut inclinatio styli semper subtrahatur.

Præterea observandum est, horas omnes in plano declinante ad Occasum.

I 2 respon-

respondentes horis declinantis ad Ortum esse contrariae denominationis, tum ratione paralleli, tum ratione transitus lineae substylaris; itaut horis Capricorni, ante transitum, in declinante ad Ortum, respondeant horae Canceri post transitum, in declinante ad Occasum; & horis post transitum, horae ante transitum: Vnde in eliciendis earum arcibus peripheriae, proprii adhibendi sunt Canonēs, velut in declinantibus ad Ortum; *semper tamen inclinatione Styli subducta.*

Exemplum. In declinante istem gradibus 54. proponatur eliciendus pro declinante ad Occasum Arcus horae correspondentis horae vndecimae Capricorni, quae est ante transitum substylaris, in declinante ad Ortum; cuius Azimuth est grad. 59. m. 15. Dico huic horae 11. iuxta dicta superius num. 14. respondere in declinante ad Occasum horam 25. nempe complementum ad 36. eamque esse duplicis denominationis oppositae, scilicet paralleli Canceri, & post transitum Styli; ac proinde Arcum illius eliciendum per Canonem tertium, numeri 18. huius praxis.

Subtraho itaque Azimuth grad. 59. m. 15. gradibus 360. relinquuntur grad. 300. m. 45. è quibus rursum inclinationem Styli grad. 38. m. 58. subduco; & remanet Arcus quaesitus grad. 261. m. 47. pro hora 25. Canceri in declinante ad Occasum grad. 54.

Tabulae hic non apponuntur, quia habentur infra lib. 2. Tab. 109.

Praxis IV. Tabulas construere pro Horologijs Verticalibus directè Ortum, & Occasum aspicientibus.

Haec Horologia describuntur in planis Meridiano aequidistantibus, quae proinde à Meridie, & Aquilone grad. 90. ad amussim declinant; vnde & Meridiana dicuntur, & hor. 12. Videatur supra lib. 2. cap. 8. partis primae.

De praequisitis ad Calculum.

- P**rimùm, conficienda est Tabella distantiarum horarum à Meridiano, sumpto Arcu Semidiurno Canceri ad Altitudinem Poli Regionis, iuxta praecepta praxis 7. superioris capituli; itaut vltima horae distantia Arcum ipsum Semidiurnum Canceri non excedat.
- 3** Pro *Italicis* ad latus distantiarum scribuntur etiam horae Capricorni; sicut in Tabella citatae praxis, num. 4. Vbi horae 24. Capricorni respondet hora 12. Canceri; 23. Capricorni, 13. Canceri, &c.
- 4** Distantiae *Aequinoctiales* formantur accipiendo grad. 90. pro hora 12. Italica, vel 6. Astronomica; reliquae verò subtractione, vel additione quindeorum graduum.
- 5** Pro *Astronomicis* exordium sumitur ab hora 6. statuendo Cyphram, hoc est, 0, pro illius distantia. Reliquarum autem horarum distantiae hinc inde à sexta formantur, sumendo gradus quindecim pro singulis horis.
- 6** Pro *Antiquis* duodecimae distantia itidem est Cyphra, siue, 0; A qua hinc, inde

inde proceditur addendo quantitatem vnus horæ, quousque assumptus Arcus Semidiurnus Cancræ non exceditur. Sed oportet conficere seorsim distantias etiam Capricorni; vt in citata praxi 7. num. 7. capitis precedentis.

7 Tùm describantur Tabularum Diagrammata duo. Alterum pro Sciathe-rico Orientali; Alterum pro Occidentali; Singula suis Arcuum, & Vmbrarum distincta laterculis, ac titulis; vt infra lib. 2. Tabulae duæ penultimæ, seu num. 181. & 182.

8 Pro *Astronomicis* tamen vnica Tabula sufficit, cum horis Orientalibus à dextris, & Occidentalibus à sinistris; ita vt sexta, sextæ; & septima, quinta, &c. vicissim respondeant. Vide praxim 1. cap. 8. primæ partis. Quibus præmissis prosequemur exemplum Horologij Italici sub Altitudine Poli grad. 45.

De Calculo Altitudinum, & Vmbrarum Gnomonicarum, & Azimuthorum Solis.

9 **P**RO Calculo tùm Altitudinum, tùm Arcuum Azimuthalium Solis, in planis Meridianis, obseruetur Diagramma hic appositum, in quo HNOV, sit Plani Meridiani superficies, Ortum directè aspiciens; ac Horologij in ea describendi, veluti Horizon; in quo supputantur Arcus Azimuthales.

HO, Horizon loci ad latitudinem Poli grad. 45. m. o.

ATB, Axis Mundi, & Meridianus Plani; B, Polus Boreus; A, Austrinus.

VTN, Verticalis primarius loci. V, Vertex. N, Nadir.

ÆTQ, Æquator.

CD, Parallelus Cancræ;

FG, Capricorni.

AIB, Circulus declinationis Solis horæ 18. Italicæ.

S, Sol existens in principio Cancræ horæ 18. Italicæ.

TSK, Verticalis Solis, cadens è T, Vertice Plani Gnomonici, per corpus Solis. S, in punctum K, Horizontis eiusdem plani.

SK, est Altitudo Solis supra planum. KB, Arcus Azimuthalis, à Meridiano plani Boreali numeratus.

10 His positis, examinandus est triangulus SBK, rectangulus in K; in quo tria sunt nota. Primum, Sinus Anguli recti, nempe Radius 100000. Secundum, basis, siue Hypotenusa esse B, quæ est Solis declinationis maxima



com-

complementum, scilicet, grad. 66. m. 30. quorum Sinus est 91706. Logarithmus 996240. *Tertium*, est Angulus distantiae horariae SBK, quem metitur Arcus Aequatoris AEI; & in praesenti exemplo horae 18. Italica grad. 25. m. 46. Quorum Sinus est 43471. Logarithmus 963820. *Quibus datis.*

11 *Altitudo Solis quacumque hora data, in parallelis extra Aequatorem, (vt in praesenti Diagrammate hora 18. Italica, nempe SK, in principio paralleli Cancr) tali reperitur Analogismo.*

Vt Radius 100000. Ad Solis declinationis complementi (in hoc exemplo) grad. 66. m. 30. Sinum 91706.

Ita, Anguli distantiae (nunc) grad. 25. m. 46. Sinus 43471. ad 39866. Sinum Altitudinis SK, grad. 23. m. 29. pro hora 18. Italica, data. Et sic in reliquis.

12 *Vcl, Logarithmicè.*

Logarithmo complementi declinationis paralleli Solis, iungatur Logarithmus distantiae à Meridiano horae datae, & colligetur Logarithmus Altitudinis quaesitae. Vt in allato exemplo horae 18. Italicae, Sole in principio Cancr.

Logarithmo complementi declinationis principij Cancr gr. 66.

m. 30. omnibus horis communis ————— 996240

Addatur Logarithmus distantiae horariae grad. 25. m. 46. ————— 963820

Colligitur Logarithmus Altitudinis quaesitae grad. 23. m. 29. ————— 960000

Monita.

13 *Primum.* Quando distantia est maior grad. 90. accipiat Sinus, vel Logarithmus illius complementi ad grad. 180. Sicut in calculo horae 24. sub latitudine Poli grad. 45. cuius horae distantia est grad. 115. m. 46. accipitur Sinus, vel Logarithmus grad. 64. m. 14.

14 *Secundum.* Eadem Altitudo, Umbra, & Arcus Azimuthalis, utriusque Tabulae, iuxta horarum correspondentiam, deseruit; vt in sequentibus calculis apparebit.

15 *Tertium.* Calculi harum Tabularum incipiendi sunt ab hora 24. procedendo ad horam tantum duodecimam exclusiue.

De Umbris.

16 *Umbrae omnium Altitudinum Sciatherici Meridiani eodem prorsus modo supputantur, ac in reliquis horarijs, per praxim 9. capitis primi, huius libri.*

De

17 **A**
rum d
Horiz
18 Hin
11. à N
10. &

Arc

19 **I** N ec
Ex da

Inda
Analog
Vt,

plo, ho
grad. 2

Arcus
20 Vel,

Log
Iung
Col

21 Aeq
Horiz

De rea

22 **H**
descup
22 Pro
Altitud
rudo.

De Altitudinibus horarum in Æquatore.

- 17 **Æ**quator EQ , in his Sciathericis Meridianis est Verticalis primarius plani; ideò altitudines illius, supra planum, coincidunt cum horarum distantijs ab ipso Meridiano loci, HNOV ; quem in plano, munus Horizontis obire diximus.
- 18 Hinc fit, vt sine alio calculo, Altitudo Æquatoris hora 1. à Meridie, vel 11. à Media nocte, & horæ 17. & 19. Italicarum sit grad. 13. Sic horæ 2. vel 10. & 16. ac 20. Italicarum grad. 30. &c.

Arcus Azimuthales tùm parallelorum, tùm Æquatoris calculo exarare.

- 19 **I**n eodem triangulo SBK , rectangulo in K .
Ex datis } Crure SK , quod semper est Altitudo Solis;
 } Basi SB , quæ semper est complementum declinationis Solis;
 } in quouis parallelo; *exempli causa*, in præsentis exemplo, principij Cancrj.
 Indagatur Crus alterum KB ; (quod est arcus Azimuthalis quæsitus) hoc Analogismo.
 Vt, Radius 100000. ad secantem Altitudinis Solis SK (in allato exemplo, horæ 18. Italicæ) grad. 23. m. 29. 109030. Ita declinationis Solis (nunc) grad. 23. m. 30. Sinus 39875. Ad Sinum 43476. complementi Cruris, siue Arcus Azimuthalis quæsitum KB , grad. 64. m. 14. pro hora 18. Italicæ.
- 20 *Vel, Logarithmicè.*
 Logarithmo declinationis Solis grad. 23. m. 30. ————— 960070
 Iungatur Tomologarith. Altitud. Solis grad. 23. m. 29. ————— 3755
 Colligitur Logarith. compl. Azimuth grad. 64. m. 14. ————— 963825
- 21 Æquatoris autem Arcus horæ cuiuslibet semper est ipsius Altitudo supra Horizontem Regionis; vt in nostro exemplo grad. 45.

De reductione Arcuum Verticalium horarum ad Circuli Peripheriam in facie parietis Orientalis.

- 22 **H**ic diligenter obseruandum, cum loquimur de distantia Maiori, vel Minori grad. 90. spectandam esse distantiam cuiusvis horæ propriam, descriptam in Tabella.
- 22 Pro horis igitur Cancrj, distantia maioris gradibus 90. addatur arcus singulis Altitudo Æquatoris: & si Arcus fuerit, 0, accipiat tantum Æquatoris Altitudo.

- 24 Si distantia sit minor grad. 90. Arcus Verticalis auferatur gradibus 360. Et differentia inde collecta addatur Altitudo Aequatoris; & si proueniens summa exstat ad unguem grad. 360. Arcus Peripheria erit, 0; Si vero excefferit, abiectionis 360. relinquetur Arcus quaesitus.
- 25 Pro horis Capricorni. Si distantia hora fuerit maior grad. 90. Arcus auferatur gradibus 180. & residuo adijce Alitudinem Aequatoris. Quod si Arcus sit Cyphra, sine 0, Altitudo Aequatoris adijciatur gradibus 180.
- 26 Si distantia fuerit minor gradibus 90. colligantur Arcus grad. 180. & Altitudo Aequatoris, & summa erit Arcus Peripheria quaesitus.
- 27 Aequatoris tandem horarum omnium Arcus est ipsius Aequatoris Altitudo, qui conuertitur in Arcus Peripheria; si addatur gradibus 270.

Arcus reducere ad Peripheriam pro Tabula Occident ali.

- 28 **P**RO horis Cancrī, distantia Minoris gradibus 90. Altitudo Aequatoris subtrahitur Arcui Verticali (mutuo assumpto integro circulo gradibus 360. quoniam

Calculus Altitudinum, Vmbrarum, Azimuthorum,

Horæ	Distantiæ Grad. M.	Logarithmi	Altitud. Gr. M.	Vmbræ P. M.
24	115. 46	Logarith. compl. ad 180. gr. 64. m. 14. 995451 Logar. compl. declin. Solis gr. 23. m. 30. *996240 Summa, Logar. Altit. horæ 24. 22. & 70. 991692 Occid. & h. 12. 22. & 70 Orientalis. Hinc Arcus Peripheriæ hor. 24. 22 Occidentalis	55. 40	8. 12
23	100. 46	Logarith. compl. ad 180. gr. 79. m. 14. 999229 Logarithmus communis *996240 Summa, Logar. Altit. horæ 23. Occid. 993469 & 11. Orientalis 22; & 13. Orient. 70. Arcus itaque horæ 23. 22 Occidentalis est	64. 17	5. 46
22	85. 46	Logarithmus distantia grad. 85. m. 46. 999881 Logarithmus communis *996240 Summa, Logar. Altit. horæ 22. 22 Occid. 996121 & h. 10. 22 Orient. necnon 14. 70 Or. Ideo Arcus horæ 22. 22 Occidentalis est gr. 324.	66. 8	5. 19
21	70. 46	Logarithmus distantia 997506 Logarithmus communis *996240 Summa, Logar. Altit. hor. 21. 22 Occid. 993746 & horæ 9. 22 Orient. & horæ 15. 70 Or. Hinc Arcus horæ 21. 22 Occid. est grad. 252. m. 9.	59. 59	6. 56

Se-

do Arcus minor est Altitudine Aequatoris ;) & residuum erit Arcus Peripheria
questus .

29 Sin verò distantia fuerit maior gradibus 90. subtrahitur gradibus 360 tùm Ar-
cus ipse Verticalis ; tùm Altitudo Aequatoris : vel ista sola , quando Arcus est
Cyphra , seu , 0 .

30 Pro Capricorno ; si distantia fuerit minor gradibus 90. tùm Arcus , tùm
Aequatoris Altitudo subtrahitur gradibus 180 .

31 Si distantia fuerit maior gradibus 180. additur Arcus , & subtrahitur Altitu-
do Aequatoris . Et quando Arcus est Cyphra , subtrahitur nihilominus Aequato-
ris Altitudo .

32 Aequatoris horarum omnium Arcus , est Aequatoris eiusdem Altitudo , que
gradibus 90. subtrahenda est . Et hæc de regulis hætenus . Modò sequuntur om-
nium operationum exempla sub latitudine Poli gradibus 45. sumptis distantijs ho-
rarijs à Meridiano ex Tabella superioris capitij , prax.7. num.4.

& Arcuum utriusque Tabula, ac Tropici.

	Logarith. & Tomologar.
Logarithmus declinationis Solis Generalis grad.23.m.30.	960070
Tomologarithmus Altitudinis horæ 24. grad.55.m.40.	24872
Summa, Logarithmus secundus Azimuth grad.45. m.0. horæ 24. & Occidentalis. & horæ 12. & Orientalis.	984942
est gr.270. & horæ 24. & gr.90. hor.12. & Or. gr.0.m.0. h.12. & gr.180.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad.64. m.17.	36259
Summa, Logarithmus secundus Azimuth grad.23. m.14. horarum præ- dictarum , 23. Occidentalis.	996329
gr.291.m.46. horæ 11. & Or. gr.21.m.46. horæ 13. & Or. gr.201. m.46.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad.66.m.8.	39296
Summa, Logarithmus secundus Azimuth grad.9. m.46.	999366
m.46. horæ 10. & Orient. gr.54.m.46. & horæ 14. & Or. gr.234.m.46.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad.59. m.59.	30081
Summa, Logarithmus secundus Azimuth grad.37.m.9.	990151
horæ 9. & Orientalis grad.82.m.9. horæ 15. & Orient. gr.262.m.9.	

K

Se-

Sequuntur calculi Altitudinum, Vmbrarum, Azimuthorum,

Horæ	Distantiæ Grad. M.	Logarithmi	Altitud. Gr. M.	Vmbræ P. M.
20	55. 46	Logarithmus distantie 991738 Logarithmus communis *996240		
		Summa, Logar. Altit. horæ 20. 25 Oc- 987978 cidental, & horæ 16. 7 Orientalis.	49. 18	10. 19
		Arcus igitur horæ 20. 25 Occidentalis est gr. 7.		
19	40. 46	Logarithmus distantie 981490 Logarithmus communis *996240		
		Summa, Logar. Altit. horæ 19. 25 Oc- 977730 cidental, & horæ 17. 7 Orientalis.	36. 47	16. 3
		Est igitur Arcus horæ 19. 25 Occidentalis gr. 15.		
18	25. 46	Logarithmus distantie 963820 Logarithmus communis *996240		
		Summa, Logar. Altit. horæ 18. 25 Oc- 960060 cidental, & 7 Orientalis.	23. 29	27. 37
		Ideo Arcus horæ 18. 25 Occidentalis est gr. 19.		
17	10. 46	Logarithmus distantie 927140 Logarithmus communis *996240		
		Summa, Logar. Altit. horæ 17. 25 Oc- 923380 cidental, & 19. 7 Orientalis.	9. 51	69. 7
		Arcus igitur horæ 17. 25 Occidentalis est gr. 21.		

33 Altitudinum, Vmbrarum, & Arcuum Aequatoris paradigma.

Horæ	Distantiæ Grad. M.	Altitudines Grad. M.	Vmbræ P. M.
12. Orientalis, & 24. Occidentalis.	90. 0	0. 0	0. 0
11. & 13. Orient. & 23. Occident.	75. 0	175. 0	3. 13
10. & 14. Orient. & 22. Occident.	60. 0	60. 0	6. 56
9. & 15. Orient. & 21. Occident.	45. 0	45. 0	12. 0
16. Orientalis, & 20. Occidentalis.	30. 0	30. 0	20. 47
17. Orientalis, & 19. Occidentalis.	15. 0	15. 0	44. 47

34 Ar.

Et Arcuum utriusque Tabulae, ac Tropici.

	Logarith. & Tomologar.
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad. 49. m. 18.	18569
Summa, Logarithmus secundus Azimuth grad. 52. m. 18.	978639
m. 18. & horæ 16. 70 Orientalis grad. 277. m. 18.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad. 36. m. 47.	9642
Summa, Logarithmus secundus Azimuth grad. 60. m. 8.	969712
m. 8. & horæ 17. 70 Orientalis grad. 285. m. 8.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad. 23. m. 29.	3755
Summa, Logarithmus secundus Azimuth grad. 64. m. 14.	963825
m. 14. & horæ 18. 70 Orientalis grad. 289. m. 14.	
Logarithmus Generalis	960070
Tomologarithmus Altitudinis grad. 9. m. 51.	645
Summa, Logarithmus secundus Azimuth grad. 66. m. 8.	960715
m. 8. & horæ 19. 70 Orientalis grad. 291. m. 8.	

- 34 Arcus Equinoctialis pro omnibus horis, est eiusdem Altitudo supra Horizontem; ut in presenti exemplo, grad. 45.
 35 Reducitur autem ad Arcus Peripheria, si in Orientali addatur gradibus 270. unde fiet gradus 315. pro omnibus punctis Vmbrarum.
 36 At in Occidentali Altitudo Aequatoris subtrahenda est gradibus 90. & sic in presenti exemplo relinquetur Arcus omnibus horis communis grad. 45.

Exempla Tabularum.

Tabulas exemplares hic non apponimus, quia habentur infra lib. 2. quæ sunt duæ Tabulae penultima, num. 181. & 182.

Praxis V. Tabulas calculo exarare pro Horologijs Sciathericis Polaribus.

Hic omnia supponimus, que de Sciatherico Polari diximus supra libro 2. capite 9. prime partis. Pro cuius ampliori explicatione, necnon illius Altitudinum, & Arcuum Azimuthalium calculo, ad proprias Tabulas Sciathericas conficiendas, Theoricum Diagramma adumbretur eiusmodi; in quo

HNOV, sit Meridianus loci, & Plani Gnomonici Polaris.

AB, Planum Gnomonicum Polare, de quo modo loquimur, transiens per utroque Polos; B, Borealem, & A, Australem; & per puncta Orientis, & Occidentis T; eleuatum super Horizontem loci, HO; grad. 45. quos metitur Arcus Meridiani, OB.

S, Locus Solis in principio Cancris, hora 18. Italica.

V, Vertex loci. Æ, Vertex Plani, A B, Polaris.

ÆSK, Quarta Verticalis cadens è Vertice Plani, A B, per corpus Solis, S; cuius etiam metitur cum Altitudinem SK, super Horizonte, A B, plani ipsius proprio; tum Arcum Azimuthalem BK, numeratum à Meridiano B, scilicet Boreali; vel TK, numeratum à puncto T, Ortus, & Occasus.

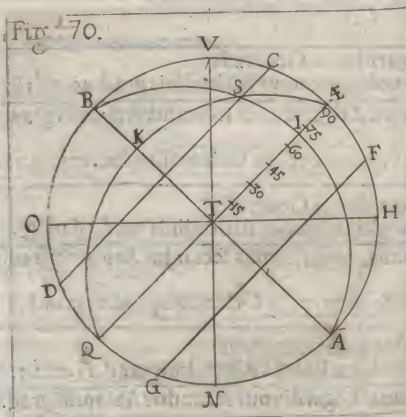
Cœtera eodem prorsus modo se habent, ac in Diagrammate superioris praxeos. Quibus positis, sit.

De Distantijs Horarijs.

Distantiæ supputantur ex Arcu Semidiurno, cuiuscumque paralleli propositi, accepto ad Altitudinem Poli Regionis, in qua delineandum est Sciathericum Polare; iuxta praxim 7. capitis primi, huius libri. Vnde Tabellæ distantiarum ibidem positæ, huic etiam calculo deferuient; sub latitudine Poli grad. 45.

Cum autem Polaris Plani duæ sint superficies, nimirum superior, & inferior, seu Australis, & Borealis, notandum est, in superficie Australi, eas tan-

Fig. 70.



tum horas cadere, quarum distantie gradus 90. non excedunt; reliquas vero ad superficiem inferiorem, scilicet, Borealem spectare.

De calculo Altitudinum, Parallelorum extra Aequatorem.

4 **P**roponatur exemplum Altitudinis horæ 18. Italicæ, Sole in principio Cancræ, cuius loci declinatio est grad. 23. m. 30. & distantia horaria ex Tabulacitate praxis 7. est grad. 25. m. 46.

In triangulo $\triangle I S$, rectangulo in I .

Dato $\left\{ \begin{array}{l} \text{Æ I, Arcu Aequatoris, qui semper est distantia à Meridiano horæ} \\ \text{data (nunc) horæ 18. grad. 25. m. 46.} \end{array} \right.$

Crure $\left\{ \begin{array}{l} I S, \text{ declinatione Solis, (nunc) grad. 23. m. 30.} \end{array} \right.$

Quæritur basis, siue hypotenusæ $\triangle S$, complementum $S K$, Altitudo Solis, hoc Analogismo.

Vt, Radius 100000. ad Sinum complementi declinationis Solis $S B$, gr. 66. m. 30. - 91706. Ita Sinus complementi cruris $\triangle I$, distantie horarie gr. 25. m. 46. - 90057. Ad 82588. Sinum Altitudinis Solis $S K$, grad. 55. m. 40. pro hora 18. Cancræ.

5 *Vel, Logarithmicè.*

Logarithmo compl. declinationis Solis grad. 66. m. 30. ——— 966240

Addatur Logarith. compl. distantie horæ 18. grad. 25. m. 46. ——— 995452

Colligitur Logarithmus Altitud. quæsitæ grad. 55. m. 40. ——— 991692

Monitum.

6 **S**ingulæ autem Altitudines paralleli Cancræ, horis etiam Capricorni distantie eiusdem deferuiunt. Vt Altitudo horæ 24. \varnothing , horæ 12. \circ : Altitudo horæ 23. \varnothing , horæ 13. \circ , &c.

Altitudines Aequatoris.

7 **A**ltitudines Aequatoris $\triangle T$, sunt Arcus distantie eiusdem ab Horizonte Plani $A B$, ex T , in \triangle , numeratæ, gradibus 15. horis singulis attributis; ita, vt ad Meridianum vsque integrum quadrantem grad. 90. perficiant; quod numeri Diagrammatis ostendunt.

De Vmbris.

8 **V**mbra Methodo eadem supputantur, ac in cæteris. Vide prax. 9. cap. 1. huius libri.

De

De Arcibus Azimuthalibus in parallelis.

- 9 IN triangulo SKB, rectangulo in K.
 Datis { Basi SB, complemento declinationis Solis grad. 66. m. 30.
 Cruce SK, Altitudine Solis grad. 55. m. 40.
 Queritur Crux alterum KB, compl. Azimuth horæ 18.

Analogismus.

VT Radius 100000. ad secantem Altitudinis Solis SK grad. 55. m. 40.
 177303. Ita declinationis Solis grad. 23. m. 30. Sinus 39875. Ad 70700.
 Sinum grad. 45. m. 0. Arcus Horizontalis horæ 18. Italica; numerati ex T,
 puncto Ortus, & Occasus; sicut reliqui omnes Arcus eiusmodi in presenti
 Sciatherico numerandi sunt.

Per Logarithmos.

L Ogarithmo declinationis Solis grad. 23. m. 30. ————— 960070
 Iungatur Tomologarithmus Altitudinis gr. 55. m. 40. ————— 24872
 Colligitur Logarithmus Azimuth grad. 45. m. 0. ————— 984942

Arcus Azimuthales Æquatoris.

- 10 PRO horis omnibus sunt duo puncta, Orientis nimirum, & Occidentis.

11 De horum Arcuum reductione ad Arcus Peripheria pro superficie superiori.

IN Antemeridialibus { Canceri { Azimuth } Aufer { grad. 90.
 { Capricorni { Azimuth } Adde { grad. 270.
 In Pomeridianis { Canceri { Azimuth } Aufer { grad. 270.
 { Capricorni { Azimuth } Adde { grad. 90.
 Æquatoris Arcus omnes { Antemeridiem { sint grad. } 90.
 Postmeridiem { sint grad. } 270.

Pro superficie verò inferiori.

Antemeridiem } Azimuthales Arcus } Adde { grad. } 270.
 Postmeridiem } Aufer { grad. } 90.

Quod Sciathericum Horologium Polare cum integro Meridiano planè coincidit.

¹² ID clarè satis explicauimus libro secundo, cap. 9. primæ partis; & hac de causa huius Sciatherici Polaris speciales calculos, Tabulasque libenter o-mittimus. Si enim Horologium integrum (idest lineis horarijs, supra, & infra lineam Horizontalem protrahitis) ex Tabula Horologij Meridiani Orientalis in plano Polari describatur; mutatis horarum tantum numeris, & ordine, vt in citato capite docuimus, erit idem exactè Polare.

Praxis VI. De Polari communiter dicto, scilicet declinante à Meridiano, describendo.

¹ IN superioris partis lib. 2. cap. 9. duplex innuimus esse planum Polare; vnum sic dictum, quasi Antonomasticè; quod scilicet per vtrosque Polos, & per puncta Ortus, & Occasus transit; & ad Meridianum rectum est; de cuius Horario egimus in præcedenti praxi, num. 12. alterum quod quidem per vtrosque Polos transit; non tamen per puncta Ortus, & Occasus; nec ad Meridianum rectum est, sed ab ipso, Ortum, vel Occasum versus, declinat; de quo loquimur in præsentì.

² Si tale itaque planum Polare declinet ad Ortum, ac Sciathericum in eius facie superiori construendum fuerit; gradus declinationis Arcui Semidiurno Cancrì, Regionis, addantur; subtrahanturque si declinatio sit ad Occasum. Idemque seruetur cum Arcu Semidiurno Equatoris grad. 90.

³ Tum ex hac Summa, vel Differentia conficiantur distantie horariæ, iuxta præcepta praxis 7. capitis primæ huius libri.

⁴ Tertio, supputentur Altitudines, & Arcus Horizontales illarum tantum horarum, quarum distantie, Arcum Semidiurnum Equatoris grad. 90. non excedunt; & pro Antemeridianis, Pomeridianisque intelligantur illæ horæ, quæ sunt ante, vel post lineam substylarem.

Exemplum.

⁵ PROpositum sit construendum Sciathericum in plano Polari declinante ad Ortum grad. 30. sub Altitudine Poli grad. 45. sic proceditur.

T A.

TABELLA DISTANTIARVM HORARVM pro allato exemplo.

Hora	115. 46	Arcus Semidiur.	Hora	Arcus Semidiur. Equat. 90	Hora
65	30. 0	Declin. Or. Plani	70	Declinatio Orient. Plani 30	75
24	145. 46		8		120
23	130. 46		9		105
22	115. 46		10		90
21	100. 46		11		75
20	85. 46		12		60
19	70. 46		13		45
18	55. 46		14		30
17	40. 46		15		15
16	25. 46		16		15
15	10. 46		17		30
14	4. 14		18		45
13	19. 14		19		60
12	34. 14		20		75
11	49. 14		21		90
10	64. 14		22		105
9	79. 14		23		120

*Altitudines, Vmbrae, & Arcus Azimuthales Cancrī,
Æquatoris, & Capricorni supputare.*

6 **H**æc omnia iisdem exantlantur Analogismis, atque in superiori præxi.

*Exemplum Altitudinis, & Vmbrae horæ 18. Cancrī
in dato plano declinante ad Ortum gr. 30.*

7 **I**ngantur Logarithmus secundus declinationis Solis maximæ gr. 23. m. 30. — 996240
Et Logarithmus complementi distantie horæ 18. gr. 55. m. 46. — 975017
Colligitur Logarithmus Altitud. quæsitæ gr. 31. m. 3. V. 19 56. — 971257

Exemplum Altitudinis, & Vmbrae horæ 18. Capricorni.

8 **L**ogarithmus secundus declinationis Solis grad. 23. m. 30. — 996240
Logarithmus secundus distantie horæ 18. gr. 4. m. 14. — 999881
Colligitur Logarithmus Altit. horæ 18. gr. 66. m. 9. V. 5. 18. — 996121
Excm.

*Exemplum Altitudinis, & Vmbræ horæ 18.
Æquatoris.*

- ⁹ **A**ltitudo Æquatoris est complementum distantiae eiusdem. Ideo horæ 18. Altitudo, est grad. 60. nempe complementum distantiae grad. 30. Vmbræ autem respondens Altitudini grad. 60. est P. 6. m. 56.

Exemplum Azimuth horæ 18. Cancrī.

- ¹⁰ **L**ogarithmus declinationis Solis grad. 23. m. 30. ————— 960070
 Tomologarithmus Altitudinis horæ 18. grad. 31. m. 3. ————— 6716
 Colligitur Logarithmus Azimuth horæ 18. dictæ, gr. 27. m. 44. ————— 966786
 Cui adde ————— grad. 270. m. 0.
 Constat Arcus eiusdem ————— grad. 297. m. 44.

Exemplum Azimuth horæ 18. Æquatoris.

- ¹¹ **Q**uoniam hora 18. Æquatoris hic est Pomeridiana; ideo Arcuseius Azimuthalis erit grad. 270.

Exemplum Azimuth horæ 18. Capricorni.

- ¹² **L**ogarithmus declinationis Solis maximæ grad. 23. m. 30. ————— 960070
 Tomologarithmus Altitudinis horæ 18. grad. 66. m. 9. ————— 39325
 Colligitur Logarithmus Azimuth horæ 18. grad. 80. m. 27. ————— 999395
 Quo deducto ē gradibus ————— 270. m. 0.
 Relinquitur Arcus horæ prædictæ graduum ————— 189. m. 33.

*Exemplum Tabulæ Gnomonica pro tribus punctis
prædictis horæ 18.*

Horæ	Tropicus Cancrī		Æquinoctialis		Tropicus Capricor.	
	Arcus	Vmbræ	Arcus	Vmbræ	Arcus	Vmbræ
	Grad. M.	P. M.	Grad. M.	P. M.	Grad. M.	P. M.
18	1297. 44	19. 56.	1270. 0.	6. 56.	1189. 33.	5. 18.

Praxis VII. De Sciathericis Aequinoctialibus.

¹ **A**Equinoctialium Sciathericorum descriptio Geometrica, quam lib. 2. cap. 10. partis primæ, adumbravimus, est quidem exacta, facilis, ac delectabilis; Verum, quo ad modum operandi expeditior, exactior, & securior euadit adminiculo Peripheriæ; ideo hanc Methodum existimaui omittere non esse.

De Altitudinibus, & Vmbris.

² **P**roposito quocumque Solis parallelo delineando in planis Aequinoctialibus, vnica erit Altitudo, ac proinde Vmbra itidem vnica, pro horis omnibus eiusdem paralleli; quippe declinatio illius ab Aequatore.

Exempli causa. Parallelorum, siue Tropicorum Cancr. & Capricorni Altitudo est grad. 23. m. 30. quanta est eorum declinatio, Vmbra verò P. 27. m. 36. & paralleli initiorum Tauri, & Scorpionis Altitudo est grad. 11. m. 30. Veluti declinatio; Vmbra P. 58. m. 59. Vnde vnica circini diuicatione, quilibet parallelus, è centro Gnomonico describi poterit.

³ Declinationes autem Signorum ad singulos gradus habentur lib. 2. primæ partis, in prima praxi, cap. 6.

De Arcubus Azimuthalibus.

⁴ **A**zimuthales Arcus omnium, & cuiuscumque generis horarum, in quouis parallelo, est earum distantia à Meridiano, supputata iuxta præcepta praxis 7. cap. 1. huius libri; sumptis Arcubus Semidiurnis sub Altitudine Poli Regionis, in qua construendum est horarium.

Exempli gratia. Arcus Azimuthales Tropici Cancr. sub Altitudine Poli grad. 45. sunt distantie, quæ habentur capite, & praxi modo citatis. Itemque parallelus Cancr. deferuit etiam Capricorno, iuxta respondentiam horarum.

Quomodo distantie reducantur ad Arcus Peripheriæ.

⁵ **D**istantie omnes Pomeridianæ cum Arcubus Peripheriæ coincidunt: Antemeridianæ verò, subtractæ gradibus 360. relinquunt Arcus quæsitos, pro Sciatherico Superiori; pro Inferiori autem è conuerso. Hinc horæ 24. Cancr. Arcus Peripheriæ, est eiusdem horæ distantia à Meridiano grad. 115. m. 46. Horæ 23. grad. 100. m. 46. &c.

Quod

*Quod pro descriptione horarum præter distantias Tropico-
rum, requiruntur distantia alterius paralleli
Æquatori vicinioris.*

ID omnino manifestum est; siquidem hoc in Sciatherico duo Tropici in
vnum coincidunt, BECD; at pro delineatione cuiuslibet lineæ hora-
ria duo saltem requiruntur puncta. Erit igitur alterum Tropici Cancrī; al-
terum paralleli vicinioris Æquatori; qualis est principij Tauri, siue cuius-
cumque gradus ipsius Arietis, & Libræ; non tamen initij; cuius cum nul-
la sit declinatio, Vmbra foret infinita; proindeque ad horas *Italicas*, & *An-
tiquas* indicandas prorsus inepta.

7 Cum distantijs itaque Cancrī, quæ habentur in Tabella *praxis 7. cap. primi
huius libri*, assumemus distantias initij Tauri, cuius Arcus Semidiurnus sub
latitudine Poli grad. 45. per *praxim 3. capitis primi huius libri*, est grad. 101. m.
44. Declinatio ex Tabula *prax. 1. cap. 6. lib. 2. primæ partis*, grad. 11. m. 30. Vm-
bra P. 58. m. 59. Ex quibus talem construximus Tabulam.

TABVLA HOROLOGII ÆQVINOCTIALIS ITALICI
Ad latitudinem Poli grad. 45.

Horæ	Cancrī		Tauri	
	Arcus Grad. M.	Vmbra P. M.	Arcus Grad. M.	Vmbra P. M.
24	115. 46	27. 36	101. 44	58. 59
23	100. 46		86. 44	
22	85. 46		71. 44	
21	70. 46		56. 44	
20	55. 46		41. 44	
19	40. 46		26. 44	
18	25. 46		11. 44	
17	10. 46		356. 44	
16	355. 46		341. 44	
15	340. 46		326. 44	
14	325. 46		311. 44	
13	310. 46		296. 44	
12	295. 46		281. 44	
11	280. 46		266. 44	
10	265. 46		251. 44	
9	250. 46		236. 44	

Praxis VIII. Sciathericum Irregulare construere in superficie declinanti à Meridiano, super quam cleuatur Polus Horizontalis, & Cælum, Terranue respicit.

- 1 **P**rimùm, per Altipolarium libri primi primæ partis, cap. 2. prax. 7. Epifag. 2. exploretur Altitudo Poli, supra Planum.
 Secundo, tria supputentur Inuenta.
 Tertio, conficiantur distantia horaria.
 Quarto, inueniantur Altitudines, Vmbra, Azimuth, &c.

Data Altitudine Poli supra planum tria Inuenta prærequisita supputare.

- 2 **P**onatur construenda Tabula Gnomonica pro Superficie, cui Polus emineat grad. 30. declinante à Meridie in Ortum grad. 50. sub Altitudine Poli Regionis grad. 45.
Inuentum primum eadem venabimur Analogia, qua supra cap. 1. prax. 10. huius libri, Azimuth, extra Equatorem indagare docuimus.
 Iungantur enim Logarithmus Altit. Poli supra Planum gr. 30. --- 969897
 Et Logarithmus secundus declinationis Muri gr. 50. --- 980807
 Colligitur Logarithmus Inuenti primi grad. 18. m. 45. --- 950704
Pro Inuento secundo iungantur
 Logarithmus secundus Altitudinis Poli, supra Planum gr. 30. --- 993753
 Tomologarithmus Inuenti primi gr. 18. m. 45. --- 2368
 Colligitur Logarithmus secundus Inuenti secundi gr. 23. m. 51. --- 996121
Pro Inuento tertio iungantur
 Logarithmus Inuenti secundi grad. 23. m. 51. --- 960675
 Tomologarithmus secundus Altit. Poli supra Planum gr. 30. --- 30103
 Colligitur Logarithmus Inuenti tertij grad. 54. m. 1. --- 990778

Dato Inuento tertio, angulos horarios, siue distantias horarias componere.

- 3 **S**umpto Arcu Semidiurno ad Altitudinem Poli Regionis (in præsentem exemplo grad. 45.) & eidem addito Inuento tertio, constituuntur distantia horaria, eadem prorsus Methodo, qua supra in praxi 3. num. 7.
 Terminantur autem distantia huiusmodi, Arcu Semidiurno, sumpto ad latitudinem Poli Superficie, quæ Altitudo (in præsentem, utpote Horizontalis) est Inuentum primum grad. 18. m. 45. & rotundè grad. 19. cuius Arcus Semidiurnus Cancræ, est grad. 98. m. 36. & Capricorni grad. 81. m. 24.

TABELLA DISTANTIARVM HORARIARVM
pro dato exemplo.

Horæ 54	115. 46. Arcus 54. 54. 1. Inuent. 3.	90. 0. Arc. Æq. 54. 1. Inuent. 3.	Horæ 54. 1. Inuent. 3.	64. 14. Arcus 54. 54. 1. Inuent. 3.	Horæ 54
24	169. 47	144. 1	24	118. 15	24
23	154. 47	129. 1	23	103. 15	23
22	139. 47	114. 1	22	88. 15	22
21	124. 47	99. 1	21	73. 15	21
20	109. 47	84. 1	20	58. 15	20
19	94. 47	69. 1	19	43. 15	19
18	79. 47	54. 1	18	28. 15	18
17	64. 47	39. 1	17	13. 15	17
16	49. 47	24. 1	16	1. 45	16
15	34. 47	9. 1	15	16. 45	15
14	19. 47	5. 59	14	31. 45	14
13	4. 47	20. 59	13	46. 45	13
12	10. 13	35. 59	12	61. 45	12
11	25. 13	50. 59	11	76. 45	11
10	40. 13	65. 59	10		
9	55. 13	80. 59	9		
8	70. 13				
7	85. 13				

*Altitudines horarum inuenire, Sole in principio Tropico-
rum existente, quæ Methodus reliquis etiam omnium
parallelorum punctis deferuire poterit.*

4 **C**asus quiuus propositus reducendus est ad illum ex tribus explicatis
(supra in prax. 8. cap. 1. huius libri) quem triangulus postulat ibidem
expensus; ac in cæteris prosequendum, iuxta casus eiusdem præcepta.
Exemplum. In casu hic proposito, quia latera trianguli horarij simul qua-
drante non excedunt; ideo in calculo Altitudinum procedendum est iuxta
tertij casus præceptionem num. 16. citate præceos. Latus enim BV (in figura
ibi exposita) scilicet complementum Inuenti primi, siue Altitudinis Poli su-
perfacialis, est grad. 71. m. 15. & latus BM, grad. 66. m. 30. Quamobrem Al-
titudinum calculus ita erit disponendus.

CAL-

CALCVLI FORM A.		IG.	M. I	Sinus
Altitudo Æquatoris Plani		1	71. 151	
Declinatio Solis in Tropicis		1	23. 301	
Aggregatum, cuius Sinus est <i>Inuentum I.</i>		1	94. 451	99657
Differentia,		1	47. 451	74022
Sinum aggregatum		1		173679
Aggregati Semissis, <i>Inuentum II.</i>				86839
Idem sublatum ab <i>Inuento I.</i> <i>Inuentum III.</i>		1	1	12818
5 <i>Modò quærat, exempli causa, Altitudo horæ 16. Cancr, cuius distantia est grad. 49. m. 47. Iungantur.</i>				
Logarithmus <i>Inuenti</i> secundi Generalis				993869
Logarithmus secundus distantie grad. 49. m. 47.				981002
Colligitur Logarithmus				974871
Huius Logarithmi Sinus est				56064
Cui si addatur <i>Inuentum tertium</i>				12818
Fit Sinus Altitudinis horæ 16. Cancr grad. 43. m. 32.				68882
Eiusque Vmbra P. 12. m. 38. more solito inuenta ex <i>praxi 9. capitis primi huius libri.</i>				
6 <i>Deinde quærat Altitudo eiusdem horæ 16. in Capricorno, cuius distantia à Meridie est grad. 1. m. 45. sic.</i>				
Logarithmus Generalis				993869
Logarithmus secundus distantie grad. 1. m. 45.				999980
Logarithmus Summa				993849
Cui respondet Sinus				86791
A quo subtracto <i>Inuento tertio</i>				12818
Relinquitur Sinus Altitudinis quæsitæ grad. 47. m. 42.				73973
Cuius Vmbra, est P. 10. m. 55.				
7 <i>Tertio, quæritur Altitudo eiusdem horæ 16. in Æquatore, cuius distantia, est grad. 24. m. 1. Sic,</i>				
Logarithmus Altitudinis Æquatoris in data superficie, (quæ est gr. 71. m. 15.) omnibus horis communis				997632
Logarithmus secundus distantie horæ 16. gr. 24. m. 1.				996007
Logarithmus Altitudinis quæsitæ gr. 59. m. 52. Vmbra P. 6. m. 58.				993699
<i>Data Solis Altitudine, & angulo horario Arcus Azimuthales indagare.</i>				
8 <i>A</i> Zimutha hinc etiam ipsædem acquires <i>Analogismis</i> , ac in <i>praxi 10. cap. I. huius libri</i> dictum est.				
<i>Exemplum. 1. Quærat Azimuth horæ 16. Capricorni, cuius modò Altitudinem inuenimus grad. 43. m. 32. Sic procedes.</i>				

Lo.

L ogarithmo complementi declinationis Solis in \odot , communis	996240
Logarithmus Anguli horæ 16. grad. 49. m. 47.	988287
Tomologarithmus Altitudinis grad. 43. m. 32.	13968
Logarithmus Azimuth grad. 75. m. 0. Arcus grad. 261. m. 9.	998395
<i>Exemplum. 2. Quæritur Azimuth horæ 16. \odot, cuius Altitudo modò inuenta, est grad. 47. m. 42.</i>	
Logarithmus communis	996240
Logarithmus anguli, siue distantie, grad. 1. m. 45.	848485
Tomologarithmus Altitudinis grad. 47. m. 42.	17198
Logarithmus Azimuth gr. 2. m. 23. Arcus grad. 153. m. 46.	861823
<i>Exemplum. 3. Quæritur Azimuth horæ 16. \odot, cuius Altitudo, est grad. 59. m. 52.</i>	
Logarithmus anguli horarum grad. 24. m. 1.	960960
Tomologarithmus Altitudinis grad. 59. m. 52.	29928
Logarith. Azimuth quæsit gr. 54. m. 10. Arcus gr. 210. m. 19.	990888

Azimuth in Arcus Peripheria conuertere.

- ⁹ **P**rimum, si opus fuerit, ex praxi I. cap. 2. huius libri, quærat distantia Verticalis, quæ tamen in præfenti exemplo; cum Altitudo \odot Equatoris sit maior grad. 66. m. 30. nempe grad. 71. m. 15. non est necessaria. Deinde sequentes feruentur canones.

Pro declinantibus ad Ortum.

- ¹⁰ **I**n horis Cancræ ante lineam styli, quarum distantia maior est distantia Verticali, Azimuthis subtrahitur Inuent. II. & cum nequit fieri subtractio, mutuo assumitur circulus integer grad. 360. & residuum erit Arcus Peripheria.
- ¹¹ Si horarum distantia fuerit minor Verticali, aggregatum ex Azimutho, & Inuento Secundo aufertur gradibus 180.
- ¹² Post verò lineam styli, si horæ fuerint distantie minoris, Azimuthis adduntur gradus 180. & aggregato subtrahitur Inuentum II.
- ¹³ Sin autem distantia maioris; Azimutha, & Inuentum II. auferuntur gradibus 360.
- ¹⁴ Et cum omnes ante, & post lineam styli sunt maioris, aut minoris distantie, quam Verticalis, quod dictum est de singulis, de omnibus intelligitur.
- ¹⁵ Pro horis \odot Equatoris, & Capricorni, ante lineam styli, aggregatum ex Azimutho, & Inuento II. aufertur gradibus 180.
- ¹⁶ Post verò lineam styli, Azimutho adduntur gradus 180. & aggregato subtrahitur Inuentum II.

Sinus

99657

74022

173679

86839

12818

Distantia est

993869

981002

974871

48

2

Distantia primi

Distantia

993869

999980

993849

86791

12818

73973

Distantia

Distantia

997632

996007

993699

Distantia

Distantia

Distantia

Distantia

Distantia

Distantia

Distantia

Pro declinantibus ad Occasum.

- 17 **O**Mnia peragantur, ut in declinantibus ad Ortum; præter quam quod *Inuentum II.* semper additur, & abiectis gradibus 360. (cum summa hunc numerum excedit) residuum erit Arcus Peripheriæ quæsitus.
- 18 Sequitur exemplum Tabulæ in tribus prædictis punctis horæ 16. pro declinante ad Ortum grad. 50. sub Altitudine Poli superficialis grad. 30. & Regionis grad. 45.

Horæ	Tropicus Cancr. I		Æquinoctialis		Tropicus Capricor.	
	Arcus	Vmbra	Arcus	Vmbra	Arcus	Vmbra
	Grad. M.	P. M.	Grad. M.	P. M.	Grad. M.	P. M.
16	1261. 9.	12. 38.	1210. 19.	6 58.	153. 46.	10. 55

- 19 Cætera, quæ hic non explicantur, *praxis 3. huius libri* suppeditabit.

Praxis I X. Sciathericum Horologium Irregulare construere in plano declinante, super quod eleuatur Polus Verticalis.

- 1 **S**I datum planum, aut superficies, quæ per Altipolarium *prax. 7. c. 2. Epifag. 2. libri primi, partis primæ*, reperiatur subesse Altitudini Poli Verticalis; necnon per declinatorium à Meridiano loci declinationem habere. Inueniantur primum tria illa inuenta, quæ in *praxi superiori* explicauimus. Deinde reliquæ peragantur operationes, quæ ad integram Tabulam conficiendam requiruntur; iuxta præcepta *praxis 3. huius libri*.
- 2 Tabulæ autem istæ muris tum Meridionalibus, tum Aquilonaribus deferuient; etiam pro horis *Babylonicis*; ut ibidem docuimus de Regularibus. Ita tamen, ut in Meridionale sursum eleuetur, *exempli causa*, grad. 10. totidem Aquilonare deprimatur deorsum.

Libri Primi Secunda Partis Finis.

SYNOPSIS
GNOMONICES BIFORMIS
PARTIS SECUNDÆ TABULARIS,
LIBER SECVNDVS;

Cuius

PARS PRIOR *Tabularum Gnomonicarum rsum, iuxta Methodum
D. Ioannis Paduanij, scilicet, per Peripheriam, & Regulam;*

POSTERIOR *Tabulas ipsas Gnomonicas CLXXXIV. seu potius CCCLXVIII.
Pro Delineandis Sciathericis Italicis, & Babylonicis, seu ab Occasu, & ab Ortus;
A Meridie, & a Media nocte, siue Astronomicis; necnon Antiquis, seu Planetarijs,
& Indaicis; Tum Horizontalibus, & Verticalibus directis; Tum Declinantibus
à Meridie, & à Borea, ad singulos gradus Declinationis, sub latitudine Poli grad.
45. m.o. supputatas continet.*

*Quæ ideò locis, & Ciuitatibus quamplurimis, in eodem circiter Parallelo,
per Europam, Asiam, & Americam existentium deseruiunt;
vt statim versa pagina, Catalogus indicat.*

*Singulis autem Tabulis propria Sciathericorum ab Occasu adiecta sunt
Diagrammata Chalcographica.*

SYLLOGEO
AVGVSTINO A' PVTEO
I. V. D. AC MATESIPHILO.

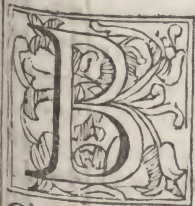


VENETIIS, Typis Antonij Bosij, M.DC.LXXIX.

SVPERIORVM PERMISSV.

Cum
et d
rit, p
fui
si, ut
diuer
de in
monst
omnia
putan
ingen
forma

MONITVM AD LECTOREM



*B*enigne Lector hic te rursus admonitum
velim, vt si quid erratum, siue in Tabu-
lis, siue in Descriptionibus Horologiorum,
in calce Tabularum, in tui commodum,
adiectis, inuenies, pienti animo accipias.

Cum enim mihi Tabulas propria manu calculo exarare,
& Diagrammata Sciathericorum delineare non vacaue-
rit, prae monstratis praeceptis, aliena opera vt compulsum
fui. Neque in ipsis Diagrammatis aliud consilij habui, ni-
si, vt locus styli, in quo Peripheria centrum figeretur, pro
diuersitate Horologij describendi innotesceret; qui proin-
de in linea Horizontali, HO, semper hoc signo (O) de-
monstratur. Caeterum mihi satis fuit, nouam Methodum,
omnium breuissimam, & facillimam, has Tabulas sup-
putandi, in libro superiori promouisse; quatuor adhibito
ingenio, & opere, sphalmata corrigere, omnia melius ef-
formare, ac perficere poteris. Vale.

CATALOGVS

LOCORVM, ET CIVITATVM,

*Quibus absque sensibili errore sequentes Tabula
Gnomonica deferuire possunt.*

A Quileia
Aqui nella Liguria
Albanella Liguria
Alessandria in Lombardia
Ambrum in Linguadocca
Angea del Lago Maggiore
Angoulesme in Guascogna
Argenta sotto Ferrara
Asti nel Piemonte
Bagnacavallo in Romagna
Bardi nella Liguria
Bassignano nella Liguria
Bergerac in Francia
Biron in Francia
Bologna in Romagna
Bondeno nel Ferrarese
Bordeos in Guascogna
Borgo S. Donino in Lombardia
Bozolo in Lombardia
Brescia in Lombardia
Brianzon nel Delfinato
Bussetto
Budrio nell'Emilia
Carmagnola nel Piemonte
Carpi in Lombardia
Casale nel Monferrato

A Quileia.
Aque Statiella.
Alba Pompeia.
Alexandria, Liguria.
Ebrudunum.
Angleria.
Inculisma.

Haste Pompeia.
Tiberiacum.
Bardium.
Augusta Bacionorum.
Bergeriacum.
Biro.
Bononia, vel Felsina.
Bondicomago.
Burdigala.
Fidentia.
Bossolum.
Brixia.
Brigantium.
Buxetum.
Butrium.
Carmeniola.
Carpia.
Casale Montisferrati.

Alt. Poli.
Grad. M.

45. 12
44. 33
44. 36
44. 44
44. 38
45. 27
45. 20
44. 38
44. 42
44. 31
44. 33
44. 53
44. 40
44. 29
44. 30
44. 51
44. 50
44. 47
45. 4
45. 32
44. 48
44. 55
44. 50
44. 39
44. 48
44. 54

Ca-

Casale
Castell
Castell
Castell
Castell
Cent
Cher
Com
Corr
Cren
Cren
Dare
Defen
Equil
Embr
Este i
Faenz
Fasso
Ferrar
Finale
Forl
Forn
Gap n
Genov
Granc
Inurea
Isola d
Limog
Mante
Medic
Messi
Milan
Miran

S
M,

Alt. Poli.
Grad. M.

45. 12
44. 33
44. 36
44. 44
44. 38
45. 27
45. 20
44. 38
44. 42
44. 31
44. 33
44. 53
44. 40
44. 29
44. 30
44. 51
44. 50
44. 47
45. 4
45. 32
44. 48
44. 55
44. 50
44. 39
44. 48
44. 54

Ca-

Casal Maggiore in Lōbardia	<i>Casale Maius.</i>	44. 57
Castel Franco nell'Emilia	<i>Forum Gallorum.</i>	44. 32
Castel Guelfo nell'Emilia	<i>Castrum Vuelphonum.</i>	44. 32
Castel Guelfo di Lombardia		44. 46
Castiglione delle Stiviere	<i>Castilio Stiuerorum.</i>	45. 24
Cento nel Ferrarese	<i>Centum.</i>	44. 39
Cherso Isola della Liburnia	<i>Crespa, vel Crexa.</i>	45. 23
Comacchio nel Ferrarese	<i>Comacula, vel Comaculum.</i>	44. 42
Correggio nel Modonese		44. 47
Crema in Lombardia	<i>Crema.</i>	45. 16
Cremona in Lombardia	<i>Cremona.</i>	45. 1
Darentaria in Sauoia	<i>Tarentaria.</i>	45. 25
Defenzan in Lombardia	<i>Digentiacum.</i>	45. 29
Equillon in Guascogna	<i>Aquilonium.</i>	44. 55
Embrun nel Delfinato	<i>Ebrodunum.</i>	44. 38
Este in Lombardia	<i>Ateste.</i>	45. 21
Faenza in Romagna	<i>Faentia.</i>	44. 33
Fasso Città di Ponto	<i>Phasis.</i>	44. 46
Ferrara in Lombardia	<i>Ferraria.</i>	44. 54
Finale nel Modonese	<i>Finarium.</i>	44. 46
Forlì in Romagna	<i>Forum Liuij.</i>	45. 17
Fornouo nel Parmegiano	<i>Forum Neuij.</i>	44. 38
Gap nel Delfinato	<i>Vapinum.</i>	44. 38
Genoua nella Liguria	<i>Ianua, & Genua.</i>	44. 27
Granoble nel Delfinato	<i>Gratianopolis.</i>	45. 11
Inurea nel Piemonte	<i>Eporadia.</i>	45. 17
Isola della Scala	<i>Insula Scaligerorum.</i>	45. 20
Limoges in Francia	<i>Lemouicum.</i>	45. 30
Mantoua in Lombardia	<i>Mantua.</i>	44. 11
Medicina nell'Emilia	<i>Meditrina.</i>	44. 34
Messarano in Piemonte	<i>Messaranum.</i>	45. 17
Milano in Lombardia	<i>Mediolanum.</i>	45. 14
Mirandola in Lombardia	<i>Mirandula.</i>	44. 54

Mo-

94

Modona nell'Emilia	<i>Mutina.</i>	44. 38
Monfelice in Lombardia	<i>Mons Silicum.</i>	45. 22
Montagnana in Lombardia	<i>Mons Aneanus.</i>	45. 12
Montignac in Francia	<i>Montiniacum.</i>	44. 54
Montmelian in Savoia	<i>Mons Melianus.</i>	45. 28
Nizza della Paglia	<i>Nicea Insubrum.</i>	44. 37
Nonantola in Lombardia	<i>Nonantula.</i>	44. 41
Nouara nell'Insubria	<i>Nouaria.</i>	45. 10
Nouellaria in Lombardia	<i>Nouellaria.</i>	44. 43
Orillac in Francia	<i>Auriliacum.</i>	45. 16
Ostilia in Lombardia	<i>Hostilia.</i>	45. 5
Padoua in Lombardia	<i>Patanium.</i>	45. 31
Pamiers in Guascogna	<i>Pamia.</i>	44. 39
Parenzo nell'Istria	<i>Parentium.</i>	45. 34
Parma in Lombardia	<i>Parma.</i>	44. 44
Pauia in Lombardia	<i>Ticinum, vel Papia.</i>	44. 58
Penderachi di Bitinia	<i>Heraclea.</i>	45. 5
Perigux in Francia	<i>Petrogorium.</i>	45. 4
Piacenza in Lombardia	<i>Placentia.</i>	44. 52
Picighittone in Lombardia	<i>Picileo.</i>	45. 3
Pinarolo nel Piemonte	<i>Pinareolum.</i>	44. 42
Pola d'Istria	<i>Pietas Iulia.</i>	45. 20
Reggio nell'Emilia	<i>Regium Lepidi.</i>	44. 43
Roueredo nella Lombardia	<i>Roboretum.</i>	44. 53
Rouigo in Lombardia	<i>Rhodigium.</i>	45. 8
Sabioneda in Lombardia	<i>Sabuloneta.</i>	45. 0
Saluzzo nella Liguria	<i>Salina.</i>	44. 30
Samarkanda in Tartaria		45. 0
Sarlat in Guascogna	<i>Sarlatum.</i>	44. 45
Sassuolo nel Modonese	<i>Saxulum.</i>	44. 32
Sauigliano nel Piemonte	<i>Sauilianum.</i>	44. 30
Signia nell'Istria	<i>Sinia.</i>	45. 32
Sufa d'Italia nell'Alpi	<i>Segusium.</i>	44. 47

To.

Torin
Torto
Tour
Valen
Varal
Venet
Verce
Veron
Vesule
Vienn
Viada
Vicen
Vigeu
Voghe
Zara N

F
mun
nun
den

44. 38	Torino nel Piemonte	<i>Taurinum</i>	44. 49
45. 22	Tortona della Liguria	<i>Dertona.</i>	44. 45
45. 12	Tournon in Francia	<i>Turnonum.</i>	45. 0
44. 54	Valencè in Francia	<i>Valentia Gallica.</i>	44. 58
45. 28	Varallo nell'Insubria	<i>Varallum.</i>	45. 30
44. 37	Veneria d'Italia	<i>Venetia.</i>	45. 33
44. 41	Vercelli nell'Insubria	<i>Vercelle.</i>	45. 3
45. 10	Verona in Lombardia	<i>Verona.</i>	45. 33
44. 43	Vesulo Monte nell'Alpi	<i>Vesulus.</i>	44. 35
45. 16	Vienna del Delfinato	<i>Vienna Allobrogum.</i>	45. 32
45. 5	Viadana in Lombardia	<i>Viellianum.</i>	44. 55
45. 31	Vicenza in Lombardia	<i>Vincentia.</i>	45. 39
44. 39	Vigevano nell'Insubria	<i>Vigeanum.</i>	45. 6
45. 34	Voghera della Liguria	<i>Vicus Irie.</i>	44. 58
44. 44	Zara Nuoua	<i>Iadera Noua.</i>	44. 34

His locis addi possunt, Bergamum, Burgos Hispaniæ, Comum, Concordia, Forum Iulij, Geneua Sabaudia, Lugdunum Gallia, Niuers, Taruifium, Tergestum (*Trieste*), Tridentum, & alij plerique.



INDEX PRAXEVM

Pro vsu Tabularum sequentium.

P Praxis I. Peripheriam, & Regulam ad vsum Tabularum Gnomonicarum sequentium construere, & longitudinem styli determinare. pag. 1

Praxis II. De vsu, & applicatione Generali Peripherie, & Regule iam constructe; seu fili loco Regule. 3

Praxis III. De Descriptione Sciatherici Italici, siue Horarum ab Occasu, per Tabulas; & Monitum de Chalcographicis figuris Sciathericorum. 3

Quid agendum sit, quando alicuius horæ Italicæ non nisi unicum punctum in Tabulis Gnomonicis reperitur. 5

Quomodo Sciathericum transferri possit in Planum propositum, si illud prius delineatum fuerit in charta. 5

Quenam lineæ, præter horarias, in planis Conotomis delineandæ sint apparentes; quæque post Sciatherici descriptionem abolendæ. 6

Praxis IV. Sciatherica Babylonica, seu horarum ab Ortus, ex iisdem Tabulis Gnomonicis delineare. 6

Praxis V. Sciatherica Astronomica, siue horarum à Meridie, & à Media nocte per easdem Tabulas depingere; & de earum parallelis. 7

Praxis VI. Quid agendum sit, quando pro descriptione horarum Astronomicarum, seu à Meridie, & à Media nocte, vel ob loci angustias, vel quia nimis remotum sit, centrum horarum ipsarum haberi non potest; & quando horæ Italicæ unicum tantum punctum habent. 7

GNO.



GNOMONICES BIFORMIS

PARTIS SECVNDÆ TABVLARIS.

LIBER SECVNDVS.

De Praxibus pro vsu Tabularum Gnomonicarum, quæ in
hoc Secundo Libro continentur.

*Praxis 1. Peripheriam, & Regulam, ad vsum Tabula-
rum Gnomonicarum sequentium construere; &
longitudinem styli determinare.*



X lamina subtiliori, metallica, aut ex crassiori papyro ab-
scindatur circuli Peripheria, vno digito lata; & in gradus
360. continuos diuisa; veluti, A C B D; cuius explicatio pa-
tet supra *prax. 1. cap. 2. superioris libri.*

Gradus in Peripheria lymbo excisi *duplici* ordine numero-
rum notentur, *exteriori*, scilicet, & *interiori*. Ordo nume-
rorum exteriorum initium sumat ex B, per C, A, & D, vsque ad 360. rur-
sus in B, pro horis Italicis, siue ab Occasu, & pro horis à Meridie, & Me-
dia nocte; & pro Antiquis, seu Planetarijs. Ordo autem numerorum *in-
terior* gradus eosdem 360. numerabit, exordiendo quidem ex B; at è con-
uerso, nimirum versus D, per A, & C, itidem in B; pro horis Babylo-
nis, siue ab Ortus.

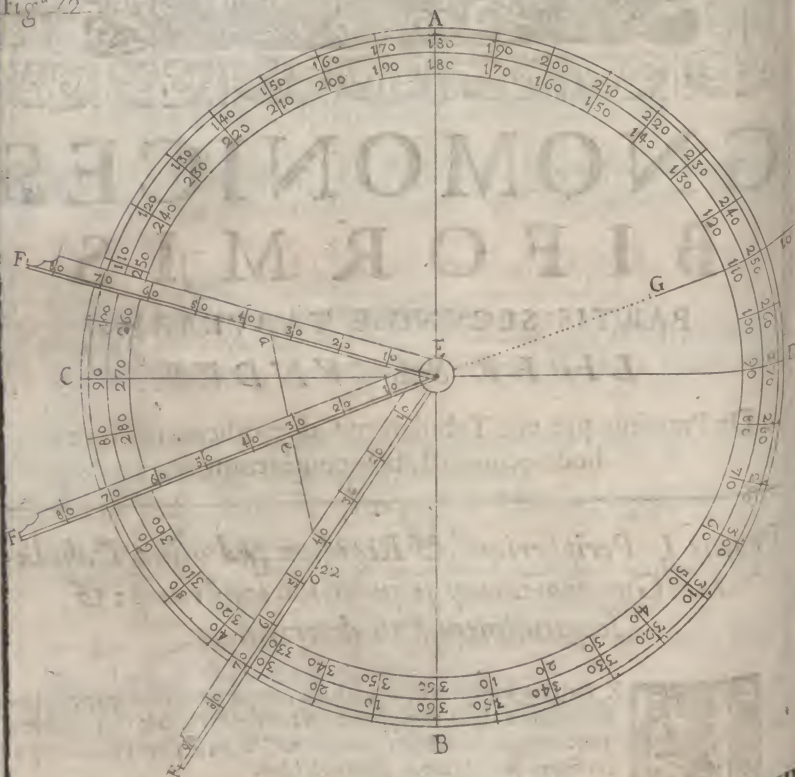
A

Dein-

2 *Gnom. Bifor. Part. II. Lib. II. Prax. I.*

3 Deinde Regula, EF, in partes quotcumque 90. vel 100. vel plures, aut pauciores diuisa paretur.

Fig^a 72.



Nota.

4 **I**N Peripheria numerantur Arcus Azimuthales, in gradibus, & minutis. In Regula verò computantur Vmbræ in Partibus, quarum singula sexaginta minutis æstimantur. Singula verò integrarum partium duodenæ, Gnomonis longitudinem valēt. In Figuris autem omnibus Horologiorum positis in calce Tabularum, Stylus est idem, ac designatus in prima Tabula.

Prax.

*Praxis II. De usu, & applicatione Generali Peripheria,
& Regula iam constructa; seu fili loco Regula.*

¹ IN superficie Plani, in quo descripturus es Horologium, agantur orthogonaliter, siue in crucem due lineæ cœcæ, veluti, A B, & C D, in *Figura superioris praxis*; ita vt sectionis communis earum punctum, E, cum loco Styli prius designato exactè congruat.

² Linea A B, in planis Horizontalibus, & in Verticalibus directis, erit semper linea Meridiana, prius inuenta, per *praxim 1. vel 2. cap. 4. lib. 2. primæ partis*; in declinantibus, linea Verticalis, beneficio perpendiculari delignata. C D, verò, in Horizontalibus, erit sectio communis plani, & Verticalis primarij; at in Verticalibus, sectio communis plani, & Horizontis.

³ His præmissis, plano ipsi clauulis affigatur Peripheria, ita vt eius Diametri, A B, & C D, cum lineis in crucem ductis; & centrum E, cum loco Styli, E, omninò coincident; eidemque centro E, figatur Regula, in gradus diuisa; vt *superioris praxis Figura* clarè satis demonstrat.

⁴ In planis *Horizontalibus* pars B, Peripheriæ Boream aspiciat; in *Verticalibus* autem *Australibus*, eadem pars B, terram versus perpendiculariter cadat; In *Aquilonaribus*, è conuerso, pars B, sursum; A, deorsum collocetur.

⁵ Cum autem, præsertim Rure, contingere possit, vt Regula tantæ longitudinis, quanta necesse foret, affabrè elaborata difficilè reperiatur; aut eam secum ferre sit Horographo res incommoda; eo casu, in præcrassa papyro describatur Styli longitudo, diuisa in partes duodecim, quarum singulæ intelligantur esse minutorum sexaginta. In E, loco Regulæ infixio clauulo appendatur filum; & paretur circinus. Tum super gradum Peripheriæ, quem Tabula Gnomonica postulat, filum extendatur, & in ipso, à centro E, Vmbrarum partes, & minutiae, circino sumptæ ex Styli diuisi longitudine (pluries etiam, si opus sit) repetita, numerentur. In numerationis enim termino, erit Vmbræ punctum quæsitum, & inuentum non secus, ac per Regulam; veluti in sequente praxi.

Praxis III. De Descriptione Sciatherici Italici, siue Horarum ab Occasu, per Tabulas; & Monitum de Chalcographicis figuris Sciathericorum.

¹ PRIMUM obseruetur quale sit Planum, in quo Sciathericum delineandum est; num scilicet Horizontale sit, aut Verticale. Quod si Verticale existat, rursus videndum est, an sit Horizonti rectum, & Meridiano directum; an verò inclinatum, aut declinans. Si directum fuerit, adhuc expendendum est, num Australe, an Boreale sit. Sin autem declinans fuerit,

eius declinatio à Meridie, vel à Borea prius determinanda est; & an sit ad Ortum, vel ad Occasum; idque vel *Organicè* (per praxim 8. cap. 2. *Episag. 2. lib. 1. primæ partis*), vel *Geometricè*, per caput 11. lib. 2. eiusdem partis.

2 Posita, ac determinata Plani qualitate, accipiat Tabula Gnomonica, dato Plano conueniens; nimirum *Prima*, si Planum Horizontale fuerit; *Secunda* verò, si Verticale rectum, & directum; aut quævis alia, si declinans fuerit, iuxta declinationis denominationem, à Meridie scilicet, vel à Borea, & ad Ortum, vel ad Occasum. Vbi *notandum est*, Tabulas Gnomonicas singulas Verticales esse duplices, hoc est, duplici Sciatherico deferuire; quorum vnum est *Australe*, & alterum *Boreale*. *Australe* delineatur per numeros laterales in Tabulis singulis, in prima columna, à sinistris Horographi positos, cui proinde titulus est, *H. Merid.* idest *horæ Meridionales*. *Boreale* verò Sciathericum describendum est per numeros vltimæ columnæ Tabulæ Gnomonicæ, quæ est à dextris Horographi; cui titulus est, *H. Aquil.* idest *horæ Aquilonares*. Vnde etiam Diagrammata Chalcographica pro horis Italicis, ad cuiuslibet Tabulæ calcem, singula duplex Sciathericum huiusmodi exprimunt; *Meridionale* scilicet infra lineam Horizontalem HO, & *Aquilonare*, siue *Boreale* supra; quod etiam indicat inscriptio.

3 His optimè expensis, Sciathericum Horizontale delineabis, vt iacet. *Verticale* autem, licet vnum, vel alterum tantum cupias, hoc est, *Meridionale*, aut *Boreale*; puncta omnia nihilominus in Plano pro descriptione singulorum horarum imprimenda sunt. Sic

4 Ex Tabula (applicata iam Plano Peripheria, & Regula, vt in *superiori praxi*) pro horis singulis, singulisque cuiuslibet horæ punctis, acceptus Arcus (per notabile num. 4. *praxis 1. huius libri*) numeretur in Peripheria; & numerationis termino admoveatur Regula secundum latus in gradus diuisum; in quo, manente immoto, numeretur Umbra eidem Arcui respondens, & in fine numerationis imprimatur punctum; Quod fiet pro singulis Arcubus, & Umbris cuiuslibet horæ; & per terna, vel bina quæque puncta, ducta recta, erit linea horæ quæsitæ.

5 *Exemplum*. Quærantur tria puncta horæ 22. Italicæ in plano Horizontali, sub Altitudine Poli grad. 45. m.o.

Ex Tabula prima, quæ habetur infra pro Horizontali, inuenio binas columnas sub titulo Cancræ, quæ sunt secunda, & tertia; & è Regione horæ 22. accipio Arcum grad. 104. m. 24. illum numero in Peripheria; & in fine numerationis sisto Regulam, secundum latus in gradus diuisum; deinde sic immoto latere, in ipso numero partes, & minuta Umbra, quæ eidem Arcui in directum respondent, nempe P. 34. m. 22. Ac in termino numerationis imprimi punctum, a, in *Figura primæ praxis*. Idem facio pro eiusdem horæ 22. imprimendo punctum, e, Equatoris, & punctum, o, Capricorni, per quæ tria puncta, ducta recta a e o, est linea horæ 22. quæsitæ. Et sic procedo in reliquis singulis horarum lineis, donec tota completa est horarij descriptio.

6 Si ergo Horologium (quod benè notandum) fuerit Horizontale, lineæ horariæ, quæ omnia tria puncta habent, ducendæ erunt omnes integræ apparen-

tes,

tes, vtrinque in extrema puncta terminata; quæ verò duo tantum puncta habent; duci debent à puncto stylo proximiori, per punctum Æquatoris quousque libuerit, idest ad arbitratiam longitudinem, quoad aliud extremum, dummodo planum descriptioni Horologij paratum non excedant. Quod si planum fuerit Verticale; *præcauendum est*, ne lineæ horariæ ducantur apparentes, nisi infra lineam Horizontalem, cœcam, CD; in *Figura primæ praxis huius libri*.

7 Tum demum refixis Peripheria, & Regula, figatur Stylus semper in proprio loco, E (cuiuscumque generis sit Horarium) perfectæ Orthogonaliter cum plano; ita, vt partes duodecim ex illis, in quas diuisa est Regula, è plano exactè promineat. Vel, vbicumque styli pes locatus fuerit, vel in plano, vel extra; & cuiuscumque figuræ, iuxta ea, quæ diximus in *superiori parte lib. 2. cap. 1.* Apex tamen illius, videlicet horarum index, locum, in aere teneat eundem, ac si plano Orthogonalis figeretur.

8 *Quæres 1. Quid agendum sit, quando alicuius horæ Italica non nisi unicum punctum in Tabulis Gnomonicis reperitur.*

Respondeo, in tali casu assumendum esse in auxilium punctum Æquatoris horæ datæ oppositæ; cuiusmodi sunt hora 11. & 23. hora 10. & 22. hora 9. & 21. Videantur ea, quæ diximus in *superiori parte lib. 2. cap. 6. prax. 5. num. 3. 4. 5. & 6. & cap. 13. prax. 2. num. 6.* Præterea infra *praxis 6. huius libri*, quæ huic etiam difficultati opem aptissimam feret.

Exemplum. Sit ducenda linea horæ decimæ Italicæ in *Figura primæ praxis huius libri*, in plano Horizontali. Hæc hora in Tabula prima habet tantum punctum Tropici Cancræ, in prædicta Figura, signatum, G. Posita itaque Regula lignea super punctum, G, & punctum, E, horæ 22. in Æquatore, duco lineam horariam, G, 10. quæsitam. Et sic in cœteris similibus.

9 *Quæres 2. Quomodo Sciathericum transferri possit in planum propositum, si illud prius delineatum fuerit in charta.*

Respondeo, id nos facillimo negotio affecuturos, si folium papyraceum, in quo Sciathericum delineatum fuerit in plano dato clauulis, aut glutine firmetur, & linearum horariorum, capita ita acu, vel subula forentur, vt in plano punctorum notæ remaneant impressæ; nam si intra binam singula extrema puncta lineæ ducantur, erit descriptum Horologium optatum in plano.

Quæ.

¹⁰ *Quæres 3. Quanam lineæ, præter horarias, in planis Conotomis delineanda sint apparentes; quæue post Sciatherici descriptionem abolenda.*

Respondeo, præter horarias, alias duas depingendas esse, scilicet, lineam *Æquinoctialem*, & lineam *Meridianam*, & si placeat, lineas etiam curvas parallelorum Solis; veluti in Sciatherico, quod habetur infra in calce primæ Tabulæ, & supra in prima parte lib. 2. cap. 6. prax. 5.

- ¹¹ Linea *Æquinoctialis* ducetur per propria puncta, saltem per duo ab inuicem remotiora, sicut infra in Sciathericis Tabularum.
- ¹² Linea *Meridiana* in Horizontalibus, & in Verticalibus planis ad Meridianum rectis, semper cum linea, E B (in *Figura prima praxis huius libri*) coincidit; atqui in planis declinantibus, semper ducenda est perpendicularis lineæ Horizontali, C D, siue, H O, in Sciathericis Tabularum sequentium, per communem sectionem lineæ *Æquinoctialis*, & horæ decimæ octauæ.

Praxis IV. Sciatherica Babylonica, seu horarum ab Ortū, ex iisdem Tabulis Gnomonicis describere.

- ¹ **E**adem Tabula Gnomonica pro horis *Italicis*, siue ab Occasu supputata, *Babylonicis*, siue ab Ortū delineandis æque deseruit, si Peripheria plano affixa, ut in secunda praxi huius libri, in descriptione horarum, ordo numerorum interior adhibeatur, ut in num. 2. praxis 1. huius libri; & horæ singulæ notentur numeris horarum, quæ sunt in prima columna Tabulæ à dextris aspicientis, hoc est numeris, quibus simul cum numero horæ ab Occasu efficiatur 24. *Exempli gratia*, hora vigesima tertia ab Occasu, erit hora prima ab Ortū; & vigesima secunda ab Occasu, fiet secunda ab Ortū, &c.
- ² Præterea idem Horologium Italicum, siue ab Occasu, *Horizontale*, & *Verticale directum* (quod etiam supra parte 1. lib. 2. cap. 6. prax. 5. num. 7. admonuimus) si describatur in folio papyraceo, capitibus linearum Acutransfixis, & lineis horarijs ductis in opposita folij superficie, *Babylonicum* fiet Horarium, siue ab Ortū; dummodo mutantur numeri, ut supra.
- ³ Notandum est tamen, pro declinantibus, Horologium *Babylonicum*, quod fit per Tabulam Gnomonicam *Italicam*, retinere quidem denominationem termini, à Quo, declinationis, hoc est, à Meridie, vel à Boreâ; at oppositam sortiri denominationem termini, ad Quem, scilicet Ortus, vel Occasus, seruata nihilominus declinationis quantitate. Quare si cupias, *exempli gratia*, Sciathericum horarum ab Ortū pro pariete declinante à Meridie ad Occasum grad. 50. describendum erit per Tabulam Gnomonicam *Sciathericam Italicam* pro declinante itidem à Meridie grad. 50. sed ad Ortum, non

ad Oc-

ad Occasum; quandocumque delineatum fuerit; siue per inuersionem folij; siue per interiorum ordinem numerorum Periphæria.

Praxis V. Sciatherica Astronomica, siue horarum à Meridie, & à Media nocte per easdem Tabulas depingere; & de eorum Tropici, & alijs parallelis.

¹ **H**uiusce rei gratia in singulis Tabulis, in inferiori laterculo, positus est numerus partium, & minorum Vmbræ Altitudinis Poli; cuius promde titulus est, *Distantia*, siue *Altitudo Poli*.

² Descripta igitur Meridiana, iacens, in *Horizontalibus*, & perpendicularis in *Verticalibus* quibuscumque, semper autem (ex num. 12. prax. 3. huius libri) per sectionem communem horæ 18. & Æquinoctialis; ea occultè producatur sursum, scilicet supra lineam Verticalem in *Horizontalibus*, aut *Horizontali* in *Verticalibus*. Tum ad ipsam occultam admoueat latus Regulæ in gradus diuisum (centro, E, fixo manente in loco Styli;) & ubi terminus partium, & minorum Altitudinis prædictæ in eodem latere numeratur, tangit occultam, imprimatur punctum: nam illud erit centrum Horologij, à quo rectæ ductæ per singulas sectiones Æquatoris, horarum integralium ab Occasu, erunt lineæ Horologij Astronomici, seu à Meridie, & à Media nocte, ex quibus Meridiana semper est linea horæ duodecimæ. Videatur *pars prima cap. 6. prax. 3.*

³ Tropici, & reliqui paralleli in Astronomicis, iidem sunt atque in horis Italicis. Quare si curuæ ipsorum lineæ ducantur, eadem opera, horas utraque terminabunt.

Praxis VI. Quid agendum sit, quando pro descriptione horarum Astronomicarum, seu à Meridie, & à Media nocte, vel ob loci angustias, vel quia nimis remotum sit, centrum horarum ipsarum haberi non potest; & quando horæ Italicæ unicum tantum punctum habent.

¹ **H**Ac de re Methodos aliquas dedimus in prima parte, præsertim libro secundo, capite sexto, praxi 3. num. 15. & capite 13. praxi 2. num. 6. cuius in primis fundamento hic generalem trademus Methodum, pulcherrimam, breuissimam, & facillimam supplendi Arcus Horizontales, quibus Tabulæ, Methodo Paduana supputatæ, apud omnes deficiunt; cum tamen in aliquibus horis omnino necessarij sint; omnibus autem commodissimi.

Arcus

Arcus Horizontales, & Verticales pro Horis Italicis,

1 Horæ		24	1	23	1	22	1	21	1	20	1	19
1 Horæ		24	1	1	1	2	1	3	1	4	1	5
G. Polar. Horizon.	G. Polar. Vertical.	Grad. M.		Grad. M.		Grad. M.		Grad. M.		Grad. M.		Grad. M.
30	60	0.	0	3.	46	7.	38	11.	42	16.	6	20. 59
31	59	0.	0	3.	53	7.	52	12.	3	16.	34	21. 34
32	58	0.	0	3.	59	8.	5	12.	23	17.	1	22. 8
33	57	0.	0	4.	6	8.	19	12.	43	17.	27	22. 41
34	56	0.	0	4.	17	8.	31	13.	2	17.	54	23. 13
35	55	0.	0	4.	19	8.	44	13.	22	18.	19	23. 45
36	54	0.	0	4.	25	8.	57	13.	41	18.	45	24. 16
37	53	0.	0	4.	32	9.	10	14.	0	19.	10	24. 47
38	52	0.	0	4.	38	9.	22	14.	18	19.	34	25. 17
39	51	0.	0	4.	44	9.	34	14.	37	19.	58	25. 46
40	50	0.	0	4.	50	9.	46	14.	55	20.	22	26. 15
41	49	0.	0	4.	56	9.	58	15.	12	20.	45	26. 43
42	48	0.	0	5.	2	10.	10	15.	30	21.	7	27. 10
43	47	0.	0	5.	8	10.	21	15.	46	21.	30	27. 37
44	46	0.	0	5.	14	10.	33	16.	3	21.	51	28. 9
45	45	0.	0	5.	19	10.	44	16.	19	22.	12	28. 29
46	44	0.	0	5.	25	10.	55	16.	36	22.	33	28. 54
47	43	0.	0	5.	30	11.	5	16.	51	22.	33	29. 18
48	42	0.	0	5.	35	11.	16	17.	7	23.	13	29. 41
49	41	0.	0	5.	40	11.	26	17.	22	23.	33	30. 4
50	40	0.	0	5.	46	11.	36	17.	36	23.	51	30. 25
51	39	0.	0	5.	51	11.	46	17.	51	24.	10	30. 48
52	38	0.	0	5.	55	11.	55	18.	5	24.	28	31. 10
53	37	0.	0	6.	0	12.	5	18.	18	24.	45	31. 30
54	36	0.	0	6.	5	12.	14	18.	32	25.	2	31. 50
55	35	0.	0	6.	9	12.	23	18.	45	25.	19	32. 9
56	34	0.	0	6.	14	12.	31	18.	55	25.	25	32. 28
57	33	0.	0	6.	18	12.	40	19.	9	25.	50	32. 46
58	32	0.	0	6.	22	12.	48	19.	21	26.	5	33. 3
59	31	0.	0	6.	26	12.	56	19.	36	26.	20	33. 20
60	30	0.	0	6.	30	13.	4	19.	34	26.	34	33. 36
Horæ		12	1	$\frac{1}{2}$	1	1	1	$\frac{1}{2}$	1	2	1	$2\frac{1}{2}$
Altron		12	11	$\frac{1}{2}$	1	11	1	$10\frac{1}{2}$	1	10	1	$9\frac{1}{2}$

Babylonis, & Astronomicis, ad plures Altitud. Poli.

18 | 17 | 16 | 15 | 14 | 13 | 12 | Italica

6 | 7 | 8 | 9 | 10 | 11 | 12 | Babyl.

Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.	Grad. M.
20. 59	26. 34	33. 5	40. 54	50. 22	61. 49	75. 15	90. 0
21. 34	27. 15	33. 52	41. 44	51. 12	62. 31	75. 40	90. 0
22. 8	27. 55	34. 38	42. 33	51. 59	63. 11	76. 9	90. 0
22. 41	28. 34	35. 32	43. 40	52. 45	63. 48	76. 25	90. 0
23. 13	29. 13	36. 5	44. 5	53. 28	64. 24	76. 45	90. 0
23. 45	29. 50	36. 47	44. 49	54. 10	64. 58	77. 4	90. 0
24. 16	30. 15	37. 27	45. 31	54. 50	65. 30	77. 23	90. 0
24. 47	31. 2	38. 6	46. 11	55. 28	66. 0	77. 40	90. 0
25. 17	31. 37	38. 45	46. 50	56. 4	66. 29	77. 56	90. 0
25. 46	32. 11	39. 21	47. 28	56. 39	66. 56	78. 11	90. 0
26. 15	32. 44	39. 57	48. 4	57. 12	67. 22	78. 26	90. 0
26. 43	33. 16	40. 32	48. 39	57. 44	67. 47	78. 39	90. 0
27. 10	33. 47	41. 5	49. 13	58. 14	68. 11	78. 52	90. 0
27. 37	34. 18	41. 38	49. 45	58. 44	68. 33	79. 4	90. 0
28. 9	34. 47	42. 9	50. 16	59. 12	68. 54	79. 10	90. 0
28. 29	35. 16	42. 40	50. 46	59. 38	69. 15	79. 28	90. 0
28. 54	35. 44	43. 9	51. 15	60. 4	69. 34	79. 38	90. 0
29. 18	36. 11	43. 37	51. 43	60. 28	69. 53	79. 48	90. 0
29. 41	36. 37	44. 5	52. 9	60. 52	70. 10	79. 57	90. 0
30. 4	37. 3	44. 32	52. 35	61. 14	70. 27	80. 6	90. 0
30. 25	37. 27	44. 57	53. 0	61. 36	70. 43	80. 15	90. 0
30. 48	37. 51	45. 22	53. 23	61. 57	70. 59	80. 23	90. 0
31. 10	38. 14	45. 46	53. 46	62. 16	71. 13	80. 31	90. 0
31. 30	38. 37	46. 9	54. 8	62. 35	71. 27	80. 38	90. 0
31. 50	38. 58	46. 31	54. 29	62. 53	71. 41	80. 45	90. 0
32. 9	39. 9	46. 52	54. 49	63. 11	71. 53	80. 52	90. 0
32. 28	39. 40	47. 13	55. 9	63. 27	72. 5	80. 59	90. 0
32. 46	39. 59	47. 33	55. 27	63. 43	72. 17	81. 5	90. 0
33. 3	40. 18	47. 52	55. 45	63. 58	72. 28	81. 11	90. 0
33. 20	40. 36	48. 10	56. 2	64. 13	72. 38	81. 16	90. 0
33. 36	40. 54	48. 28	56. 19	64. 26	72. 48	81. 21	90. 0

3 | 3 $\frac{1}{2}$ | 4 | 4 $\frac{1}{2}$ | 5 | 5 $\frac{1}{2}$ | 6 | Astro-9 | 8 $\frac{1}{2}$ | 8 | 7 $\frac{1}{2}$ | 7 | 6 $\frac{1}{2}$ | 6 | Inomica

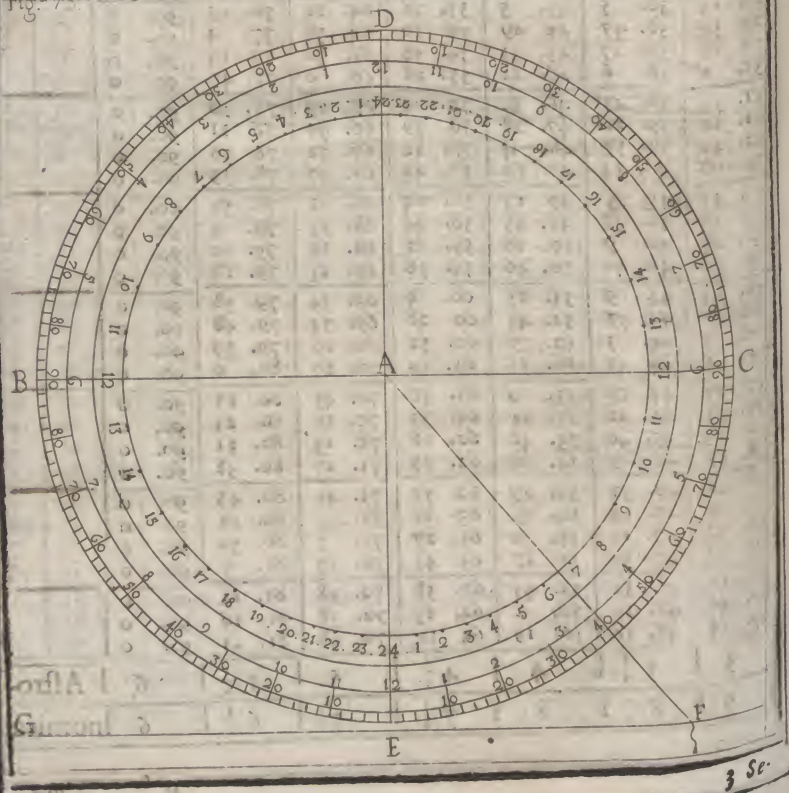
2 *Primum* itaque (*per num. 13. prax. 3. c. 6. prima partis*) ad altitudinem Poli Regionis, sub qua cōcinnatae sunt Tabule Gnomonicae, supputentur Arcus Horizontales; (idest Arcus Horizontis, inter Verticalem primarium, & singulos circulos horarios intercepti) pro singulis dimidiis horis Astronomicis.

Exemplum. Quærat^r ad Altitudinem Poli grad. 45. Arcus Horizontalis horæ semissis ante, vel post Meridiem, erit.

Analogismus. Vt Radius 100000. Ad Altitudinis Poli grad. 45. Sinum 70711. Ita distantia à Meridiano cuiuslibet horæ semissis, in Æquatore grad. 7. m. 30. Tangens 13165. Ad 9309. Tangentem grad. 5. m. 19. Arcus Horizontalis horæ dimidiæ ante, vel post Meridiem. Singulis eni n semissibus horarum pro distantia à Meridiano tribuendi sunt gradus 7. m. 30. Vt distantia

Exempli gratia, horæ tertiæ, & dimidiæ, sit grad. 52. m. 30.

Fig. 7.



3 *Secundò*, Inuenti Arcus disponantur ex ordine, adiectis horis *Astronomicis*, *Italicis*, & *Babylonicis*, velut in superiori Tabula Arcuum Horizontalium, ad plures Altitudines Poli supputata.

4 *Tertiò*, in subtiliori lamina merallica, aut in præcrassa papyro describatur Peripheria, A B C D E, cuiuscumque amplitudinis; minoris tamen, quàm Peripheriæ, quæ pro descriptione horarum assumitur. Illius Quadrantes singuli diuidantur in gradus 90. capta numeratione ex D, & E, versus B, & C. Tùm Arcus Horizontales iam Inuenti in ea distribuuntur, & in intimo Peripheriæ circulo notentur punctis, quibus horæ, tùm *Italica*, siue ab Occasu, tùm *Astronomica*, siue à Meridie, & Media nocte, eadem subijciuntur serie, qua in apposita Graphide Peripheriæ apparet; fluatque ex centro A, filum, A F; erit instrumentum Arcuum Horizontalium, pro horis *Astronomicis*, *Italicis*, & *Babylonicis* pulcherrimè paratum; cuius talis erit vsus.

5 In *Sciathericis Horizontalibus* producatür linea Meridiana, E B, (in *Figura primæ praxis huius libri*) supra lineam Verticalem, C D; vel (in *presenti Figura*) B C, ex E, in A, ad longitudinem arbitrariam Styli, E A. Deinde centrum A, Peripheriæ clauulo firmetur in plano, ita, vt cum Apice Styli, A, exactè congruat; & Semidiameter, D E, omninò cum plani Meridiana coincidat. Tùm supra singula puncta interioris circuli contendantur filum, A F, vt secet Verticalem, G F, veluti in F; & singulæ sectiones puncto notentur: erunt hæc puncta Horographis auxilio, in horis describendis, dato quouis alio puncto cuiusvis paralleli, aut *Æquatoris*; etiam absque centro Horologi.

Quoniam autem hæc Peripheria ita diuisa, & quoad horas numerata, maxime *Verticalibus* deseruit; Notandum est, pro descriptione Horizontalium, horas *Italicas*, quæ continentur in Quadrante, B E, commutandas esse in earum complementa vsque ad triginta sex. *Exempli gratia*, hora 12. in 24. hora 13. in 23. 14. in 22. &c. *Babylonica* autem, scilicet, horæ Quadrantis, E C, conuertendæ sunt in earum complementa ad num. 12. hoc est, prima in vndecimam; secunda in decimam, &c. sic & *Astronomica*, posita in tertio spatio Peripheriæ.

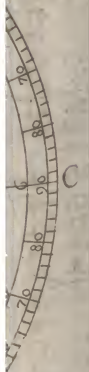
6 Pro *Verticalibus directis*, eodem modo, collocata Arcuum Horizontalium Peripheria; & filo, A F, per singula puncta circuli interioris extento, sectiones, quæ proinde contingent in linea Horizontali, easdem notabunt horas, quæ in ipsis spatijs Peripheriæ.

7 In *Verticalibus denique Declinantibus*, producta itidem Verticali, quæ per Stylum transit, supra Horizontalem, G F, ad longitudinem Styli, E A, clauulus fixus in centro, A, Peripheriæ, eandem firmabit, in A, vertice Styli; sed volubilem, vt hinc, inde in gyrum acta, eius Semidiameter, A E, cum linea, A E, producta in plano Conotomo angulum plani declinationis concludat; & quidem à dextris Horographi, si planum declinat ad Ortum; veluti Angulus, E A F; à sinistris verò, si in Occasum vergit. Nam eo situ immota permanente, filum A F, extantum super singula pun-

cta

Poli Re-
cus Ho-
& singu-
omicis.
zontalis

n 70711.
grad. 7.
Horizon-
libus ho-
distantia



3 Se.

Ita interioris circuli, Arcus Horizontales respondentes horis eisdem, quæ in Peripheria describuntur, in linea, GF, Horizontali distinguet. Verum hæc pro vulgaribus.

8 Cœteroqui expertus Horographus (ex num. 13. praxi 5. cap. 11. lib. 2. primæ partis) hæc omnia perficiet, vel simplici Quadrante; vel Regula ipsa, EF, (Figura primæ praxis huius libri) Arcubus Horizontalibus (per num. 15. prax. 5. modocitate) conuersis in Vmbra; ad proportionem Styli in 12. partes æquales diuisi, (per praxim 9. cap. 1. superioris libri) redactas. Verum de ijs hæc tenus.

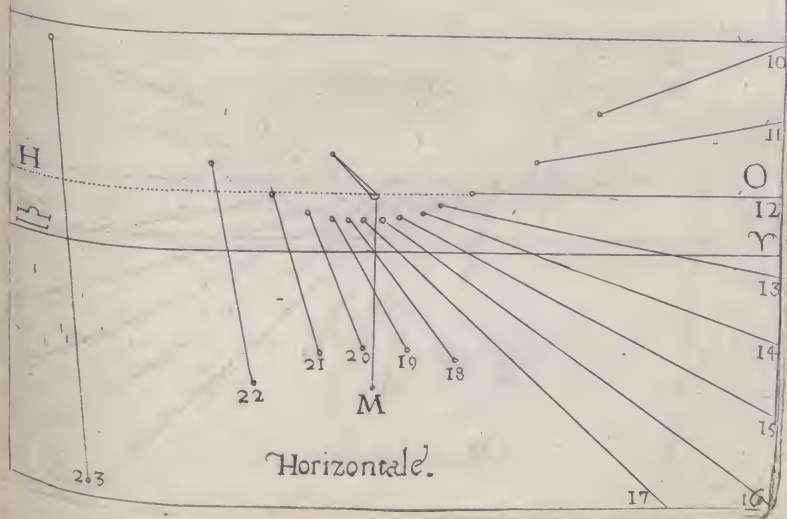
Sequuntur iam Tabula Gnomonica.

I. N. SS. T. D. Q. V.

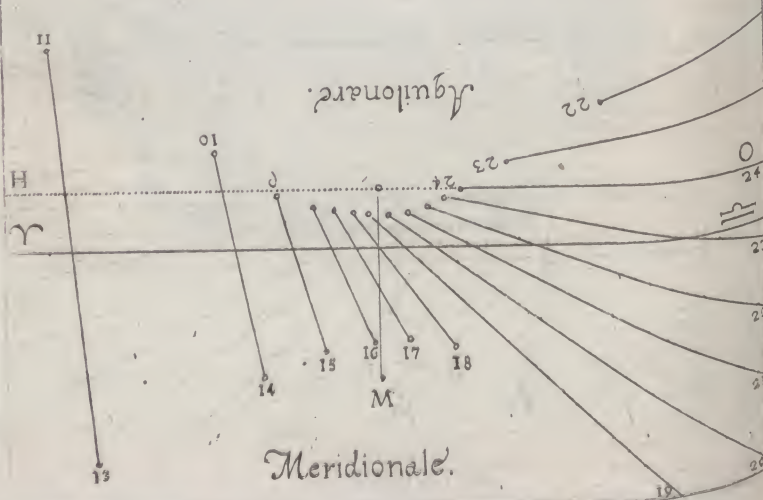


T A-

2. primæ
EF, (Fi-
prax. 5.
æqua-
ijs ha-

[illegible]

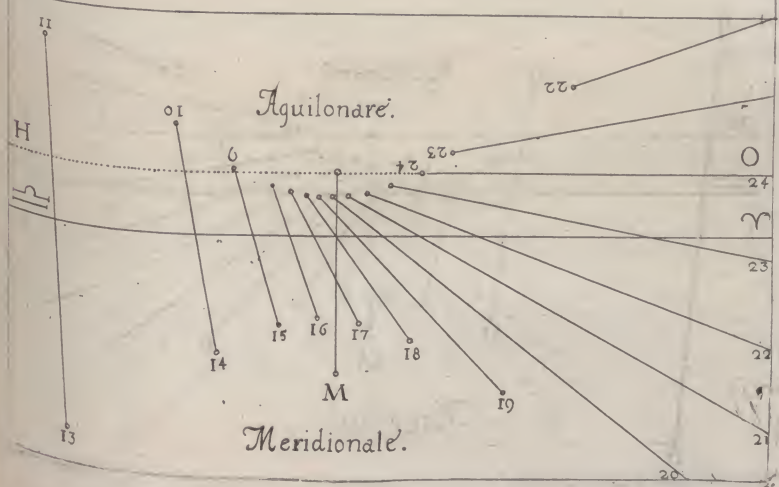
Tab. 11. Verticale Meridiei et Boream directe Aspiciens Pol. 45.													
H. Merid.	Tropie Capricor.				Æquinoctialis.				Tropie Cancr.				H. Aquilo.
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.		
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	
13	114.	7	73.	41	79.	16	64.	26	44.	33	83.	58	11
14	104.	20	34.	20	67.	48	31.	45	32.	14	45.	38	10
15	94.	31	21.	2	54.	44	20.	47	18.	40	34.	18	9
16	83.	47	14.	9	39.	14	15.	29	4.	10	30.	39	8
17	70.	45	9.	51	20.	45	12.	50	349.	26	31.	37	7
18	52.	50	6.	56	360.	0	12.	0	335.	17	37.	52	6
19	25.	46	5.	9	339.	15	12.	50	322.	14	56.	8	5
20	349.	30	4.	48	320.	46	15.	29	310.	28	144.	26	4
21	317.	34	6.	0	305.	16	20.	47					3
22	296.	14	8.	26	292.	12	31.	45					2
23	281.	31	12.	3	280.	44	64.	26					1
24	270.	0	17.	34	270.	0							24
25	259.	54	27.	14									25
26	250.	10	49.	47									22
27	240.	13	175.	17									21



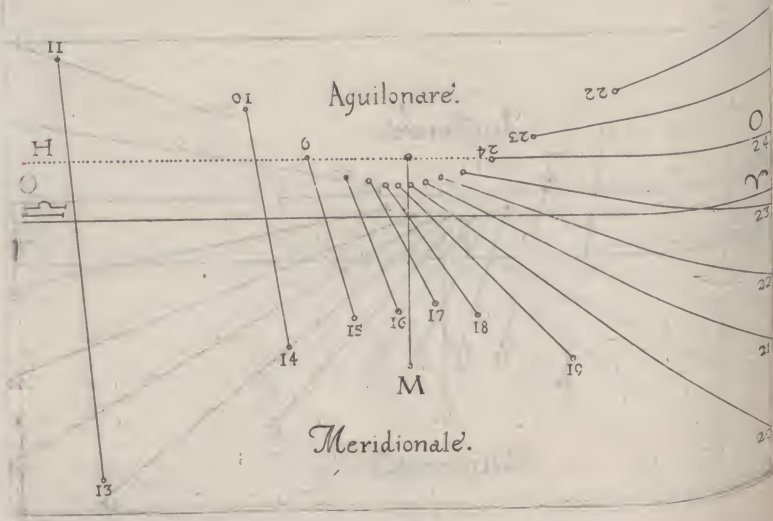
45.	
cri	11
bra.	10
M	9
58	8
38	7
18	6
39	5
37	4
52	3
8	2
26	1
Pol.	24
M	25
O	22
	21

Declinat: ad Ort: Grad: 1 Lat: 45.

H Merid	Tropie Capric.			Aguinocctialis			Tropie Cancr.			H Aquil.
	Arcus.	Umbra.		Arcus.	Umbra.		Arcus.	Umbra.		
	G	MP	M	G	MP	M	G	MP	M	
27	240	14	225	15						21
26	250	15	53	46						22
25	250	57	28	34						23
24	270	0	18	16						24
23	281	43	12	28	280	42	71	12		1
22	295	35	8	42	292	5	33	24		2
21	316	6	6	10	304	57	21	28		3
20	349	57	4	50	320	11	15	50	310	26
19	23	36	5	4	338	23	13	0	322	5
18	51	46	6	44	359	0	12	0	335	1
17	70	11	9	32	19	52	12	42	349	6
16	83	36	13	42	38	37	15	10	3	48
15	94	38	20	16	54	23	20	8	18	20
14	104	25	32	33	67	39	30	16	31	0
13	114	10	66	55	79	14	58	49	44	26
12	124	20	825	13	90	0	687	34	55	40

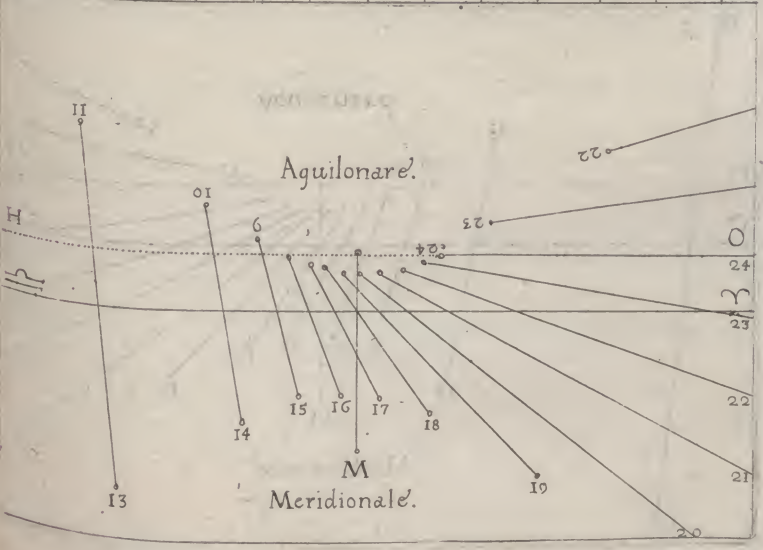


Declinat: ad Occas: Gr: 1. lat: 45.											
Tropie. Capric.				Aequinoctialis				Tropie. Cancr.			
Arcus.		Vmbra		Arcus.		Vmbra		Arcus.		Vmbra	
G.	MP.	M.		G.	MP.	M.		G.	MP.	M.	
13.	114.	4	81.	56	79.	18	71.	12	44.	38	92.
14.	104.	18	36.	18	67.	55	33.	24	32.	20	47.
15.	94.	26	21.	54	55.	3	27.	28	19.	0	34.
16.	83.	52	14.	39	39.	49	15.	50	4.	33	30.
17.	71.	5	10.	10	21.	37	13.	0	349.	49	31.
18.	53.	52	7.	9	1.	0	12.	0	335.	34	37.
19.	27.	5	5.	16	340.	8	12.	42	322.	24	53.
20.	351.	59	4.	48	321.	23	15.	10	310.	32	124.
21.	319.	2	5.	51	305.	37	20.	8			
22.	296.	52	8.	11	292.	21	30.	16			
23.	281.	41	11.	43	280.	46	58.	49			
24.	270.	0	16.	56	270.	0	687.	34			
25.	259.	50	26.	0							
26.	250.	3	46.	31							
27.	240.	10	143.	25							
										Alt: Pol.	1
										P. M.	23
										12.	0



ancr.
nbra.
M
0 11
20 10
54 9
45 8
20 7
0 6
28 5
38 4
3 3
2 2
1 24
23 23
22 22
0 21

Tab. v.		Declinat: ad Ort: Gr: 2. Lat. 45											
H. Mend.	H. Aquil.	Tropic' Capric.				Aguinoctialis.				Tropic. Cancr.			
		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
		G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M
27	240	.	314	.	49	.		.		.		.	21
26	250	.	19	58	.	12	.			.		.	22
25	250	.	57	30	.	0	.			.		.	23
24	270	.	0	18	.	59	.			.		.	24
23	281	.	12	12	.	55	280 . 40 79 . 30	.		.		.	1
22	295	.	2	9	.	1	291 . 56 35 . 9	.		.		.	2
21	344	.	45	6	.	23	304 . 38 22 . 14	.		.		.	3
20	344	.	39	4	.	54	319 . 36 16 . 14	310 . 22 213 . 32	4	.		.	4
19	21	.	22	4	.	57	337 . 32 13 . 10	321 . 55 62 . 43	5	.		.	5
18	50	.	36	6	.	30	358 . 0 12 . 1	334 . 43 39 . 57	6	.		.	6
17	69	.	53	9	.	12	18 . 57 12 . 32	348 . 42 32 . 16	7	.		.	7
16	83	.	32	13	.	12	37 . 50 14 . 40	3 . 22 30 . 26	8	.		.	8
15	94	.	39	19	.	26	54 . 2 19 . 20	17 . 59 33 . 9	9	.		.	9
14	104	.	32	30	.	56	67 . 30 28 . 53	31 . 36 42 . 30	10	.		.	10
13	114	.	21	61	.	16	79 . 11 54 . 3	44 . 20 71 . 27	11	.		.	11
12	124	.	21	412	.	29	90 . 0 343 . 44	55 . 39 416 . 38	12	.		.	12

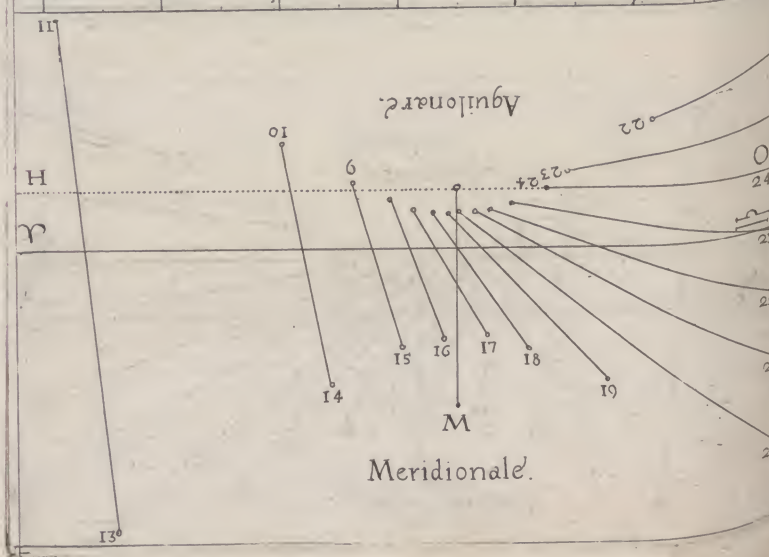


Tab. 6

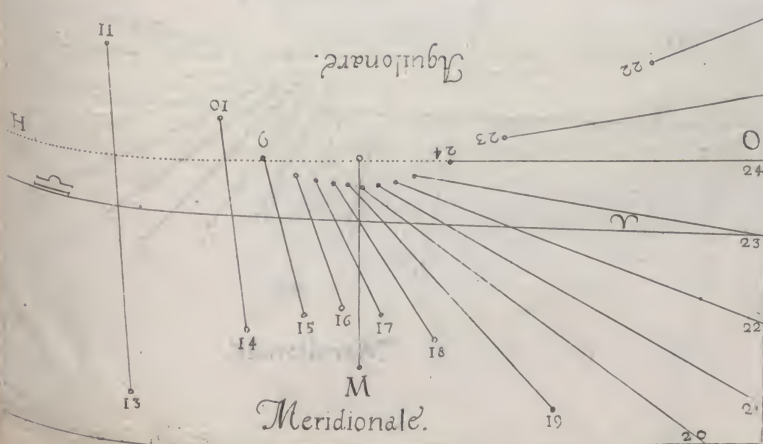
Declinat. ad Occas. Gr. 2. Lat. 45.

H. Merid.	Tropie. Capri.				Aguinoctialis.				Tropie. Cancr.				H. Aquil.						
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.								
	G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	M.							
13.	114	.	1	92	.	11	79	.	20	79	.	20	44	.	44	101	.	54	11
14.	104	.	12	38	.	29	68	.	4	35	.	9	32	.	40	40	.	25	10
15.	94	.	28	22	.	51	55	.	22	22	.	14	19	.	19	35	.	35	9
16.	83	.	54	15	.	12	40	.	24	16	.	14	4	.	57	30	.	53	8
17.	71	.	24	10	.	32	22	.	28	13	.	10	350	.	12	31	.	1	7
18.	54	.	46	7	.	24	2	.	0	12	.	1	335	.	53	36	.	46	6
19.	29	.	46	5	.	23	341	.	3	12	.	32	322	.	36	50	.	46	5
20.	354	.	30	4	.	44	322	.	1	14	.	49	310	.	36	109	.	17	4
21.	330	.	11	5	.	40	305	.	58	19	.	29							3
22.	297	.	36	7	.	54	292	.	30	28	.	53							2
23.	281	.	53	11	.	15	280	.	43	54	.	3							1
24.	270	.	0	16	.	20	270	.	0	343	.	44							24
25.	259	.	44	24	.	53													23
26.	249	.	59	43	.	28													22
27.	240	.	8	120	.	56													21

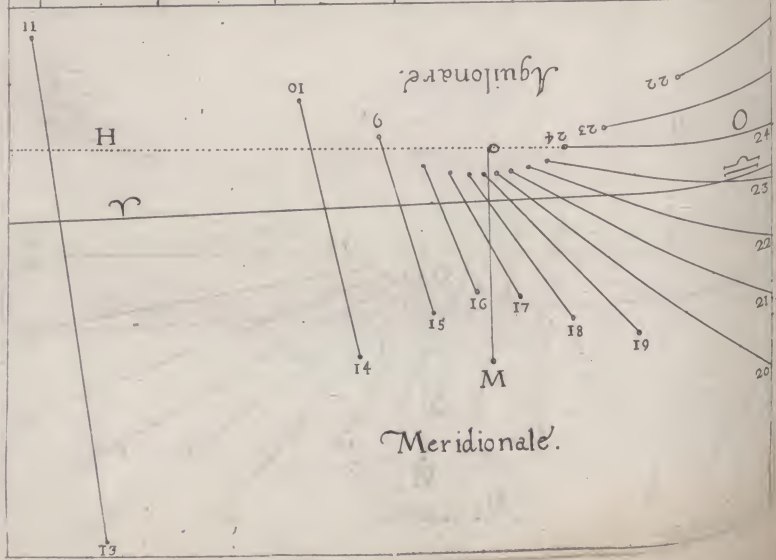
Alt. Pol.
P. M.
12.



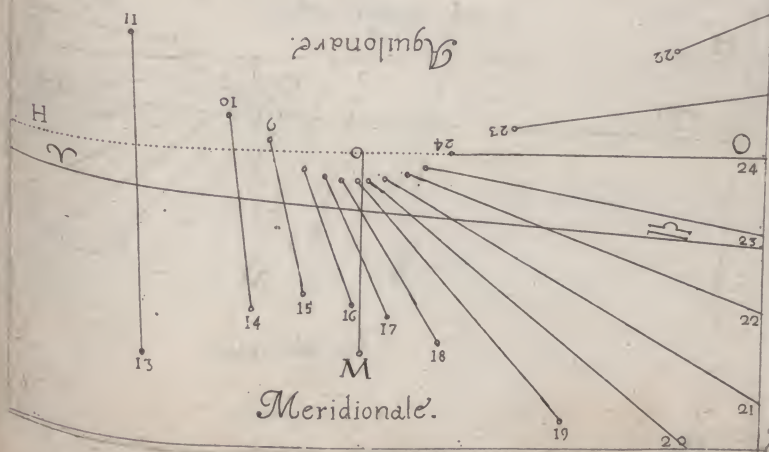
cri.		H. Aquil.		Declinat. ad Ort. Grad. 3. Lat 45.												H. Aquil.									
bra.		M		H. Merid.		Tropie. Capric.		Aguinotialis.		Tropie. Canc.		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		H. Merid.	
						G. M P. M		G. M P. M		G. M P. M		G. M P. M													
54	11	27	240	16	839	38																		21	
25	10	26	250	22	63	28																		22	
35	9	25	260	0	31	31																		23	
53	8	24	270	0	19	41																		24	
1	7	23	281	1	13	20	280	39	39	44														1	
		22	294	32	9	17	291	50	37	47														2	
4	6	21	313	37	6	33	303	57	23	0														3	
46	5	20	342	33	4	58	319	4	16	36	310	21	304	30	4									4	
17	4	19	19	15	4	53	336	43	13	21	321	47	66	27	5									5	
3		18	49	20	6	19	357	2	12	2	334	29	40	58	6									6	
2		17	69	20	8	55	18	5	12	2	348	20	32	34	7									7	
		16	83	27	12	48	37	22	14	30	3	1	30	21	8									8	
		15	94	46	18	42	53	40	18	54	17	40	32	37	9									9	
		14	104	40	29	39	67	19	27	40	31	33	41	11	10									10	
		13	114	21	57	13	79	8	50	6	44	13	64	16	11									11	
		12	124	22	322	44	90	0	232	43	55	38	322	14	12									12	



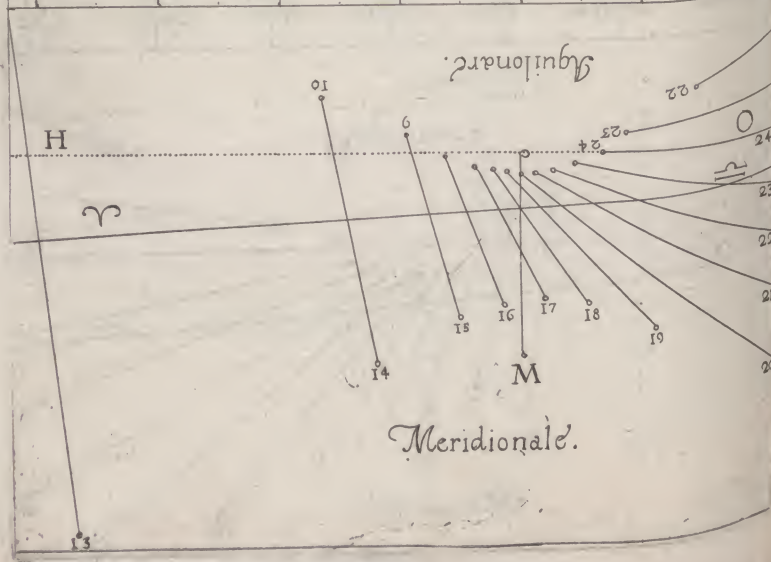
Declinat. ad Occas. Gr. 3. Lat. 45.												H Aquil.	
H Merid.	Tropie. Capric.		Aequinoctialis		Tropie. Canc.								
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.							
	G	M	P	M	G	M	P	M	G	M	P	M	
13	113	56	106	7	79	21	90	37	44	48	114	11	11
14	104	8	40	51	68	10	37	47	32	50	51	27	10
15	94	22	23	48	55	3	23	0	19	36	36	25	9
16	84	6	15	42	40	56	16	36	5	6	31	2	8
17	71	48	10	52	22	17	13	21	350	33	30	46	7
18	55	39	7	37	2	58	12	2	336	10	35	18	6
19	31	31	5	30	341	55	12	24	322	47	48	47	5
20	356	40	4	43	322	38	14	30	310	40	99	19	4
21	322	16	5	32	306	20	18	54				3	
22	298	14	7	39	292	41	27	40				2	
23	282	10	11	55	280	52	50	7					1
24	270	0	15	48	270	0	231	34					23
25	259	35	23	58									24
26	249	54	41	14									22
27	240	5	108	11									21
												Alt. Pol.	
												P. M.	
												12. . 2.	



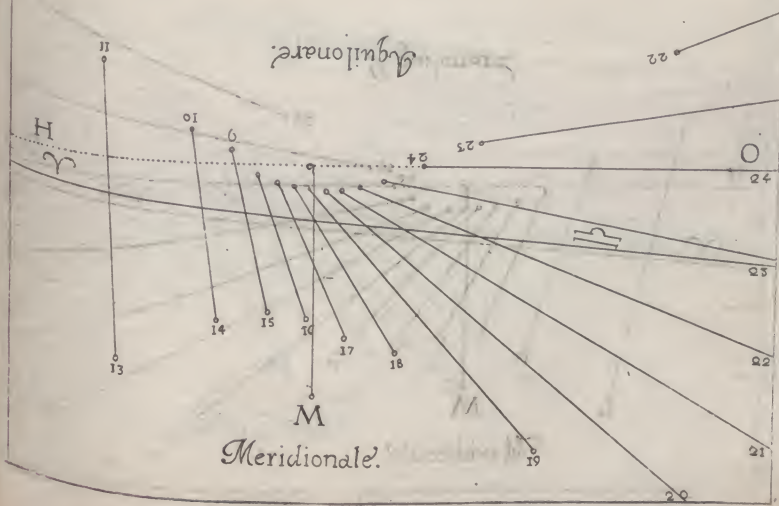
12 6		Declinat. ad Ort. Gr. 4. Lat. 45.																12 6	
H. Merid.		Tropic. Capr.				Aguinoctialis.				Tropic. Cancr.				H. Aquil.					
		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.							
		G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M						
27	240 .	17	1528 .	36										21					
26	250 .	26	69 .	43										22					
25	260 .	7	33 .	18										23					
24	270 .	0	20 .	31										24					
23	280 .	55	13 .	51	280 .	37	103 .	27						1					
22	293 .	58	9 .	38	201 .	43	39 .	17						2					
21	312 .	17	6 .	47	304 .	3	23 .	52						3					
20	340 .	3	5 .	3	318 .	32	17 .	2	310 .	19	404 .	24	4	4					
19	36 .	43	4 .	48	338 .	54	13 .	33	321 .	38	71 .	4	5	5					
18	48 .	5	6 .	6	386 .	0	12 .	4	334 .	11	42 .	13	6	6					
17	68 .	53	8 .	36	17 .	8	12 .	16	347 .	59	32 .	58	7	7					
16	83 .	13	12 .	19	36 .	41	14 .	12	2 .	35	30 .	17	8	8					
15	95 .	9	18 .	0	53 .	17	18 .	19	17 .	16	32 .	6	9	9					
14	104 .	46	28 .	7	67 .	10	26 .	27	31 .	16	39 .	42	10	10					
13	114 .	26	52 .	24	79 .	6	46 .	31	44 .	6	62 .	13	11	11					
12	124 .	25	206 .	8	90 .	0	171 .	37	55 .	36	206 .	8	12	12					



Tabx. Declinat. ad Occas. Gr. 4. Lat. 45.																			
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Canc.				H. Aquil.						
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.								
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M							
13.	113	.	53	110	.	53	79	.	23	103	.	27	44	.	54	128	.	57	11
14.	104	.	4	43	.	37	68	.	17	39	.	17	33	.	4	53	.	54	10
15.	94	.	21	24	.	55	55	.	57	23	.	52	19	.	57	37	.	3	9
16.	84	.	9	16	.	20	41	.	28	17	.	2	5	.	43	31	.	12	8
17.	72	.	7	11	.	16	24	.	6	13	.	33	350	.	59	30	.	31	7
18.	56	.	33	7	.	53	4	.	0	12	.	4	336	.	30	34	.	28	6
19.	33	.	29	5	.	39	342	.	52	12	.	16	323	.	0	46	.	27	5
20.	359	.	35	4	.	42	323	.	19	14	.	12	310	.	46	87	.	59	4
21.	324	.	11	5	.	22	306	.	43	18	.	19		.			.		3
22.	399	.	4	7	.	22	292	.	50	26	.	27		.			.		2
23.	282	.	26	10	.	31	280	.	54	46	.	31		.			.		1
24.	270	.	0	15	.	11	270	.	0	171	.	37		.			.		24
25.	259	.	30	22	.	51		.			.			.			.		23
26.	249	.	47	38	.	32		.			.			.			.		22
27.	240	.	1	92	.	37		.			.			.			.		21
																	Alt. Pol.		
																	P. M.		
																	12	.	4.



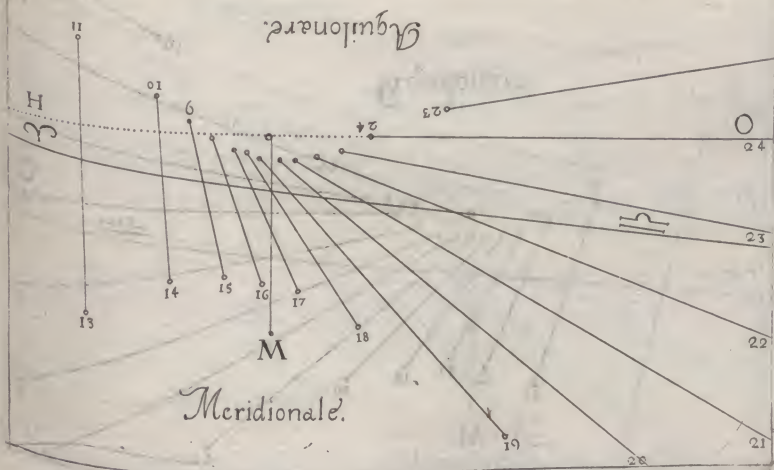
45.		Tab. XI Declinat. ad Ort. Gr. 5. Lat. 45.															
anc. mbra.		H. Aquil.		Tropie Capric.				Aguinocialis.				Tropie Canc.				H. Aquil.	
M		H. M. d. y. H.		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
		G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	
57	11	26	250	28	78	8											22
54	10	25	260	9	35	14											23
3	9	24	270	0	21	24											24
12	8	23	280	36	14	19	280	36	122	45							1
31	7	22	293	28	9	56	291	37	41	48							2
28	6	21	311	8	7	0	303	46	24	47							3
27	5	20	337	56	5	9	318	0	17	29	310	19	195	15	4		4
59	4	19	14	4	4	44	335	3	13	45	321	31	76	15	5		5
3		18	46	48	5	54	354	5	12	5	334	58	43	32	6		6
2		17	68	30	8	18	16	9	12	8	347	37	33	28	7		7
1		16	83	13	11	54	35	58	13	13	2	12	30	12	8		8
24		15	94	20	17	22	52	53	17	45	16	56	31	34	9		9
23		14	104	54	26	54	66	57	25	20	30	60	38	28	10		10
22		13	114	33	49	6	79	2	43	16	43	56	58	39	11		11
21		12	124	27	165	24	90	0	135	48	55	35	164	29	12		12

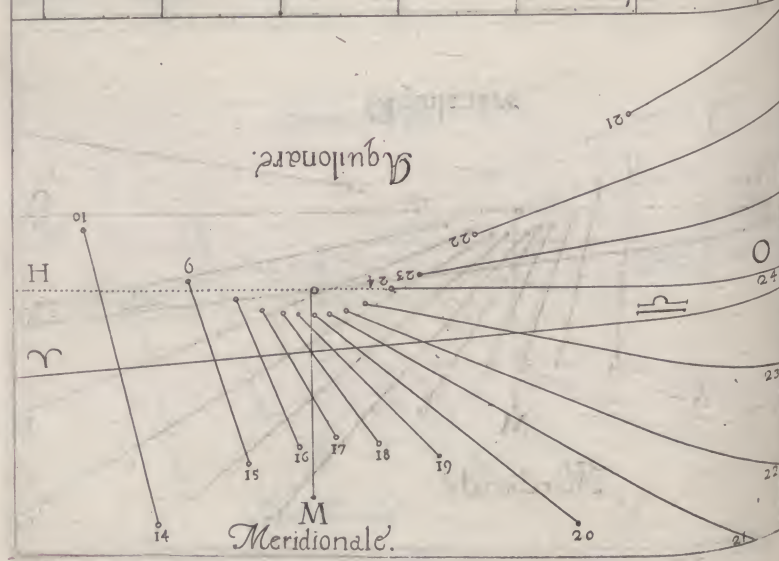


Tab. XII.		Declinat. ad Occas. Gr. 5. Lat. 45.											
H. Merid.	Tropie' Capric.				Æquinoctialis.				Tropie' Canc.				H. Pol.
	Arcus.		Umbra		Arcus.		Umbra		Arcus		Umbra.		
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M	
13	113	. 52	147	. 1	79	. 24	122	. 45	44	. 56	151	. 55	11
14	103	. 56	46	. 34	68	. 23	41	. 48	33	. 16	56	. 30	10
15	94	. 18	26	. 6	56	. 14	24	. 47	20	. 13	37	. 48	9
16	84	. 17	16	. 56	42	. 0	17	. 29	6	. 5	31	. 22	8
17	72	. 30	11	. 38	24	. 57	13	. 45	351	. 21	30	. 16	7
18	57	. 24	8	. 7	5	. 1	12	. 5	336	. 50	33	. 30	6
19	35	. 12	5	. 47	343	. 51	12	. 8	323	. 12	44	. 34	5
20	2	. 6	4	. 42	324	. 2	13	. 53	310	. 50	81	. 36	4
21	326	. 1	5	. 13	307	. 8	17	. 45	299	. 42	1650	. 34	3
22	299	. 52	7	. 8	293	. 3	25	. 20					2
23	282	. 40	10	. 9	280	. 58	43	. 16					1
24	270	. 0	14	. 36	270	. 0	235	. 48					24
25	259	. 24	21	. 58									23
26	249	. 42	36	. 34									22
27	239	. 56	83	. 53									21

Alt. Pol.
P. M.
12 . 5

Tab. XIII. Declinat. ad Orr. Grad. 6. Lat. 45.													
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Canc.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
26	250	33	86	40									22
25	260	16	37	16									23
24	270	0	22	15									24
23	280	34	14	50	280	35	147	33					1
22	293	2	10	16	291	29	44	22					2
21	310	0	7	11	303	30	25	41					3
20	335	45	5	14	317	30	17	54	310	18	3761	43	4
19	11	50	4	40	334	28	13	57	321	23	18	36	5
18	45	24	5	43	354	2	12	8	333	42	44	47	6
17	67	51	8	1	15	15	12	1	347	17	33	44	7
16	83	10	11	29	35	17	13	37	1	49	30	9	8
15	94	48	16	43	52	29	17	18	16	34	31	4	9
14	104	53	25	39	66	47	24	21	30	44	37	16	10
13	114	37	45	38	79	0	40	41	43	47	54	58	11
12	124	29	130	2	90	0	114	11	55	32	138	34	12



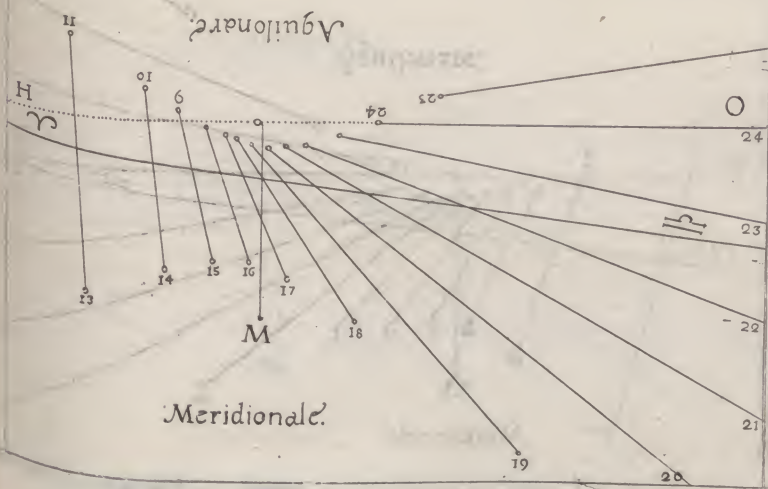
[illegible]

5. nc. h. Aquil. M. 2 11 10 10 36 9 32 8 2 7 58 6 41 5 17 4 49 3 2

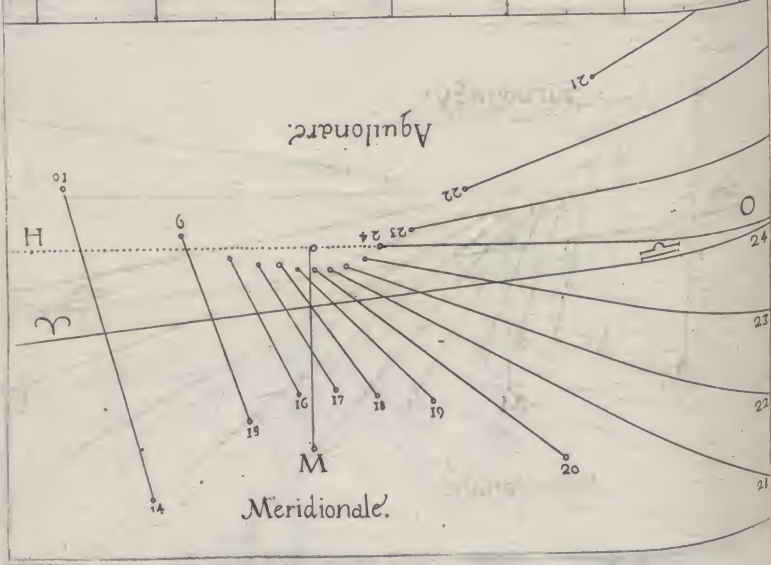
5. Pol. M. 8 21 22 23 24

Feb. xv. Declinat. ad Ort. Grad. 7. Lat. 45.

Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Canc.		Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G. M P . M	G. M P . M	G. M P . M	G. M P . M	G. M P . M	G. M P . M	G. M P . M	
26	250 . 35	100 . 36					22
25	260 . 19	39 . 49					23
24	270 . 0	23 . 17					24
23	280 . 17	15 . 23	280 . 35	189 . 51			1
22	292 . 33	10 . 37	291 . 25	47 . 36			2
21	308 . 57	7 . 25	303 . 15	26 . 45			3
20	333 . 40	5 . 19	317 . 0	18 . 23			4
19	9 . 13	4 . 37	333 . 30	14 . 11	321 . 17	89 . 8	5
18	43 . 47	5 . 32	353 . 2	12 . 11	333 . 28	46 . 20	6
17	67 . 18	7 . 44	14 . 20	11 . 35	346 . 56	34 . 10	7
16	82 . 58	11 . 6	34 . 16	13 . 35	1 . 24	30 . 6	8
15	94 . 52	16 . 16	52 . 1	16 . 44	16 . 10	30 . 38	9
14	105 . 6	24 . 34	66 . 34	23 . 21	30 . 27	36 . 9	10
13	114 . 45	42 . 59	78 . 56	38 . 0	43 . 36	52 . 3	11
12	124 . 32	120 . 32	90 . 0	99 . 52	55 . 28	120 . 34	12

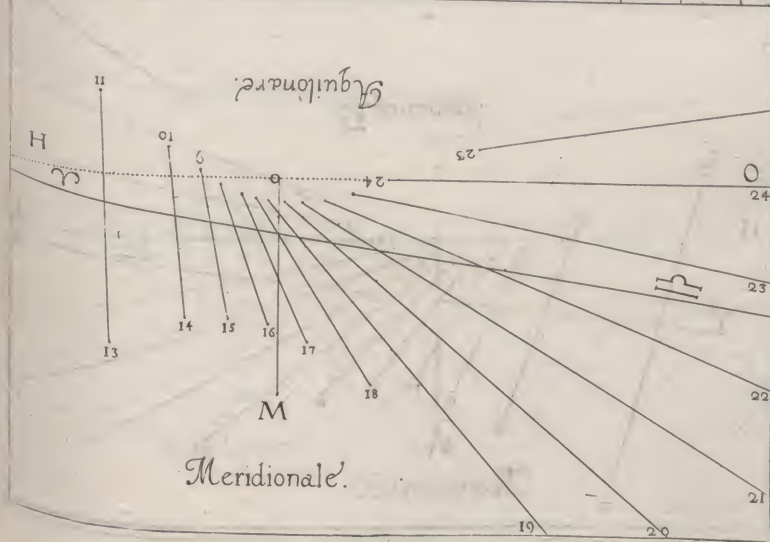


Tab. xvi.		Declinat. ad Occas. Gr. 7. Lt. Gr. 45.													
H. Merid.	Tropic. Capric.				Æquinoctialis.				Tropic. Canc.						H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	M P	M	P	G.	M P	M	P	G.	M P	M	P			
13	113	48	267	49	79	25	202	20	45	2	226	46	11	26	25
14	103	53	54	38	68	35	47	41	33	34	62	29	10	25	26
15	94	14	28	43	56	45	26	45	20	49	39	29	9	24	27
16	84	23	18	16	43	0	13	26	6	51	31	45	8	23	28
17	73	6	12	27	26	30	14	10	352	9	29	50	7	22	29
18	58	56	8	40	6	58	12	11	337	30	32	17	6	22	292
19	38	27	6	6	345	40	11	55	323	40	41	6	5	21	307
20	7	13	4	46	325	44	13	20	311	4	67	57	4	20	331
21	330	3	4	56	307	59	16	46	299	44	374	22	3	19	6
22	301	40	6	38	393	26	23	24					2	18	42
23	283	10	9	28	281	4	38	20					1	17	66
24	270	0	13	38	270	0	99	48					24	16	82
25	259	15	20	15									23	15	95
26	249	25	32	49									22	14	103
27	239	46	68	30									21	13	114
28	229	42	234	27									20	12	124
											Alt. P	Pol. M			
											12	11			

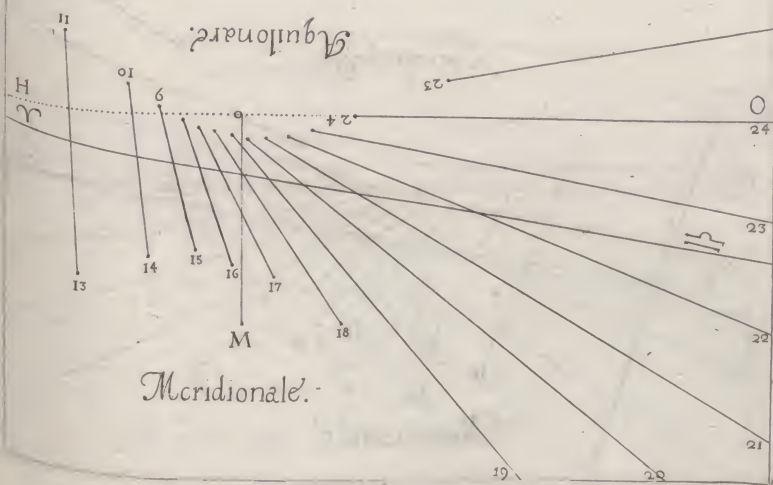


Tab. xvii. Declinat. ad Ort. Gr. 8 ad Lat. Gr. 45.

H. Merid.	Tropic Capric.		Aequinoctialis.		Tropic Canc.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G.	MP.	MG.	MP.	MG.	MP.	M.	
26	250 . 37	114 . 11					22
25	260 . 22	42 . 10					23
24	270 . 0	24 . 16					24
23	280 . 7	16 . 31	280 . 36	256 . 4			1
22	292 . 11	10 . 58	291 . 17	50 . 54			2
21	307 . 56	7 . 39	303 . 1	27 . 46			3
20	331 . 39	5 . 27	316 . 32	18 . 52			4
19	4 . 41	4 . 35	332 . 46	14 . 24	321 . 10	96 . 21	5
18	42 . 14	5 . 22	352 . 41	12 . 14	333 . 13	47 . 46	6
17	66 . 40	7 . 28	13 . 15	11 . 50	346 . 35	34 . 37	7
16	82 . 51	10 . 43	33 . 46	13 . 5	0 . 59	30 . 5	8
15	95 . 9	15 . 32	51 . 34	16 . 17	15 . 48	30 . 12	9
14	105 . 13	23 . 33	66 . 22	22 . 29	30 . 11	35 . 5	10
13	114 . 51	40 . 23	78 . 52	36 . 4	43 . 27	49 . 13	11
12	124 . 35	103 . 43	90 . 0	85 . 23	55 . 24	103 . 43	12

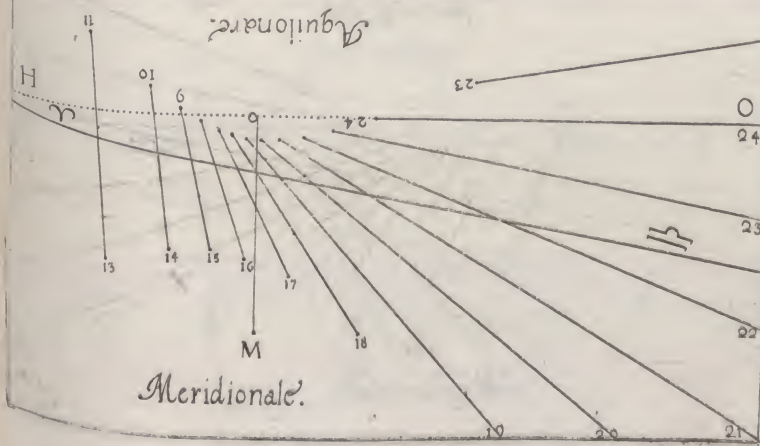


Tab. XVIII. Declinat. ad Ort. Grad. 9. Lat. Gr. 45.													
H. Merid.	Tropie. Capric.				Æquinoctialis.				Tropie. Canc.				H. Aquilo.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	MP	P	M	G.	MP	P	M	G.	MP	P	M	
26	250	39	140	48									22
25	260	25	45	16									23
24	270	0	25	24									24
23	280	6	16	31	280	38	412	29					1
22	291	42	11	20	291	15	54	58					2
21	306	59	7	53	302	48	28	58					3
20	328	48	5	34	316	5	19	24					4
19	4	4	4	34	332	4	14	39	321	6	106	44	5
18	40	29	5	12	351	4	12	18	333	1	49	32	6
17	66	3	7	13	12	14	11	40	346	16	35	5	7
16	82	42	10	22	33	0	12	49	0	38	30	3	8
15	95	3	15	0	51	5	15	49	15	25	29	48	9
14	105	23	22	36	66	9	21	38	29	57	34	9	10
13	115	0	38	16	78	47	34	5	43	15	46	52	11
12	124	40	93	1	90	0	77	0	55	20	93	3	12

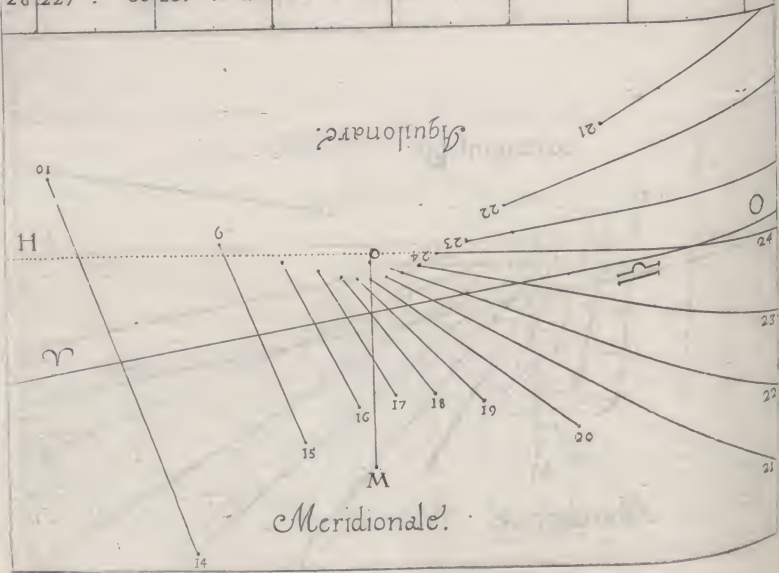


Tab. XXI. Declinat. ad Ort. Grad. 10. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Canc.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G. M P. M	G. M P. M	G. M P. M	G. M P. M	G. M P. M	G. M P. M	G. M P. M	
26	250 . 41	168 . 9					22
25	260 . 18	48 . 8					23
24	270 . 0	26 . 37					24
23	279 . 52	17 . 18	280 . 37				1
22	291 . 23	11 . 42	291 . 9	58 . 38			2
21	306 . 7	8 . 8	302 . 33	30 . 12			3
20	327 . 53	5 . 43	315 . 30	19 . 55			4
19	1 . 25	4 . 33	331 . 15	14 . 53	321 . 6	113 . 43	5
18	38 . 41	5 . 2	350 . 9	12 . 23	332 . 51	51 . 59	6
17	65 . 20	6 . 5	11 . 14	11 . 38	345 . 55	55 . 12	7
16	82 . 34	10 . 0	32 . 22	12 . 36	0 . 13	30 . 1	8
15	94 . 58	14 . 28	50 . 35	15 . 22	15 . 3	29 . 25	9
14	105 . 34	21 . 44	66 . 0	20 . 52	29 . 37	32 . 35	10
13	115 . 11	36 . 4	78 . 40	32 . 21	43 . 7	44 . 2	11
12	124 . 46	82 . 40	90 . 0	67 . 57	55 . 17	83 . 18	12

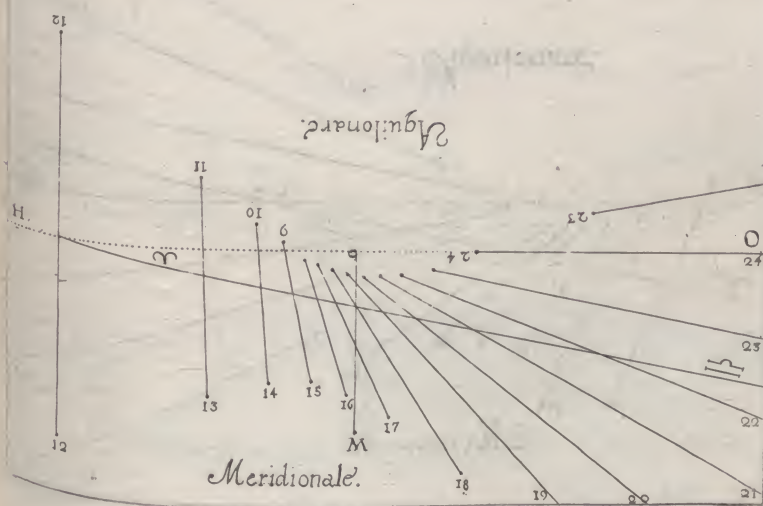


Tab. xxii Declinat. ad Occas. Grad. 10. Lat. 45.												
H. Merid.	Tropie Capric.				Aquinocctialis.				Tropie. Canc.			
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.	
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.
14	103	43	71	2	68	51	58	38	34	2	73	40
15	94	6	33	24	57	27	30	12	21	39	42	12
16	86	6	20	30	44	30	19	55	7	30	32	16
17	75	47	13	45	28	45	14	53	353	22	20	16
18	61	33	9	27	9	51	12	23	338	34	30	29
19	42	45	6	37	348	46	11	38	324	25	36	47
20	14	31	4	53	327	38	12	36	311	28	54	58
21	337	16	4	37	309	25	15	25	299	50	143	55
22	304	21	5	59	294	0	20	52				
23	384	12	8	32	281	20	32	21				
24	270	0	12	22	270	0	67	57				
25	260	8	18	3								
26	249	0	28	23								
27	239	27	54	0								
28	229	38	239	24								
												Alt. Pol.
												P. M.
												12 . 23

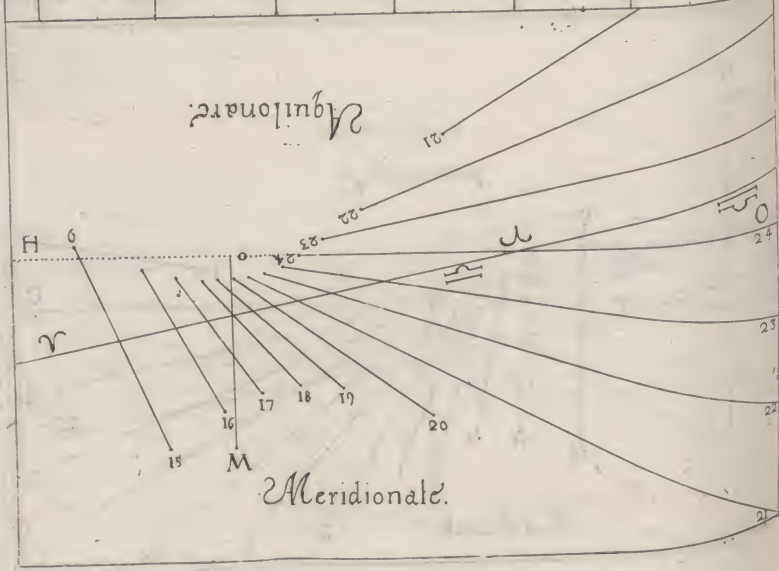


Tab. xxiii. Declinat. ad Ort. Grad. 11. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Canc.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G . MP . MG . MP . MG . MP . M							
26 250 . 42 237 . 36							22
25 260 . 41 52 . 35							23
24 270 . 0 27 . 53							24
23 280 . 21 17 . 47							1
22 290 . 58 12 . 5	291 . 5	64 . 57					2
21 305 . 17 8 . 15	302 . 22	31 . 32					3
20 326 . 18 5 . 51	315 . 14	20 . 29					4
19 358 . 50 4 . 33	330 . 38	15 . 8	320 . 56	133 . 21	5		5
18 36 . 45 4 . 53	349 . 11	12 . 20	332 . 36	53 . 12	6		6
17 64 . 34 6 . 42	10 . 56	11 . 34	345 . 47	36 . 4	7		7
16 82 . 24 9 . 42	31 . 25	12 . 22	359 . 49	30 . 3	8		8
15 95 . 10 13 . 58	50 . 8	14 . 57	14 . 38	29 . 4	9		9
14 105 . 42 21 . 3	65 . 40	20 . 6	29 . 13	32 . 21	10		10
13 115 . 17 34 . 24	78 . 33	30 . 55	42 . 52	42 . 38	11		11
12 124 . 50 75 . 41	90 . 0	61 . 44	55 . 10	75 . 42	12		12
11 100 . 19	724 . 6	66 . 12	808 . 48	13			13



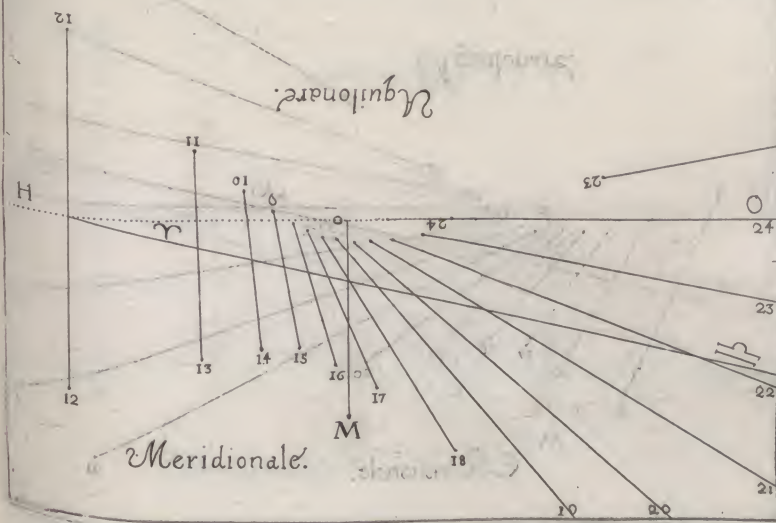
Tab. xxiv.		Declinat. ad Occas. Grad. 11. Sgt. 45.												H. Aquil.
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canc.				H. Merid.	
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.			
	G.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	MG.	MP.		
14	103	41	80	32	68	55	64	57	34	20	78	55	10	
15	94	9	35	0	57	33	31	32	21	55	43	27	9	
16	84	29	21	21	44	46	20	29	8	19	32	29	8	
17	74	12	14	14	29	22	15	8	353	46	29	7	7	
18	61	29	9	49	10	49	12	26	338	56	29	54	6	
19	44	2	6	49	349	4	11	34	324	40	39	27	5	
20	16	53	4	57	328	35	12	22	311	37	51	54	4	
21	339	11	4	32	309	52	14	57	299	52	124	45	3	
22	305	39	5	46	294	20	20	6					2	
23	284	30	8	14	281	27	30	55					1	
24	270	0	11	52	270	0							24	
25	258	26	17	25	259	41							23	
26	248	50	27	11									22	
27	239	21	49	25									21	
28	229	36	197	7									20	
											Alt. Pol.			
											P. M.			
											12	26		



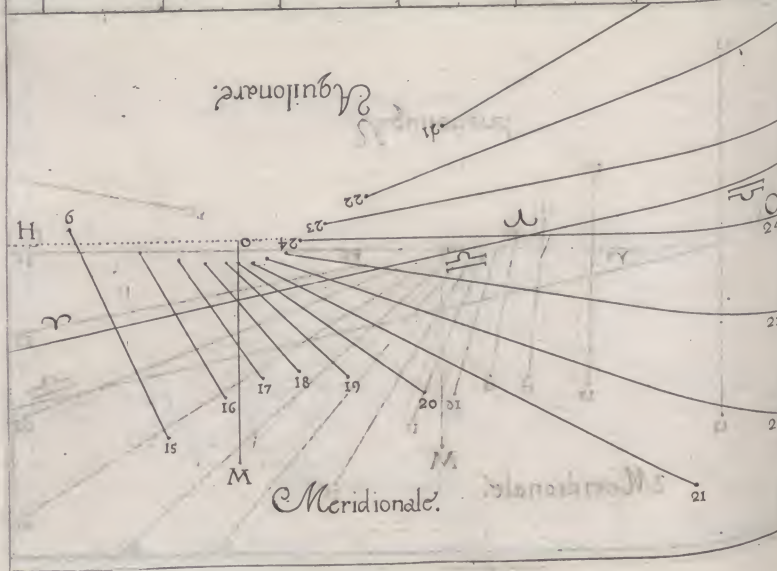
Tab. xxv.

H. Merid.	Tropie. Capric.		H. Aquil.
	Arcus.	Umbra.	
26	250		
25	260		
24	270		
23	279		
22	290		
21	304		
20	324		
19	356		
18	38		
17	63		
16	82		
15	95		
14	105		
13	115		
12	124		
11	134		

Tab. xxv. Declinat. ad Ort. Grad. 12. Lat. 45.									
El. Merid.	Tropic. Capric.		Aequinoctialis		Tropic. Canc.		H. Aquil.		
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.			
	Gr.	MP.	MG.	MP.	MG.	MP.	M.		
26	250	53 307	46					22	
25	260	34 56	27					23	
24	270	0 29	14					24	
23	279	50 18	26					1	
22	290	36 12	29	291	1 71	27		2	
21	304	33 8	38	302	9 34	51		3	
20	324	35 6	0	314	49 21	4		4	
19	356	14 4	35	330	3 15	25	320	51 149	10 5
18	38	45 4	45	348	16 12	32	332	24 55	16 6
17	63	46 6	27	9	12 11	30	345	17 36	34 7
16	82	11 9	18	30	34 12	9	359	25 30	5 8
15	95	15 13	29	49	36 14	33	14	14 28	43 9
14	105	55 20	5	65	26 19	25	28	55 31	32 10
13	115	25 32	40	78	35 29	14	42	49 40	44 11
12	124	54 68	46	90	0 56	27	55	5 69	0 12
11	134	51 1967	10	100	32 550	4	66	13 400	29 13

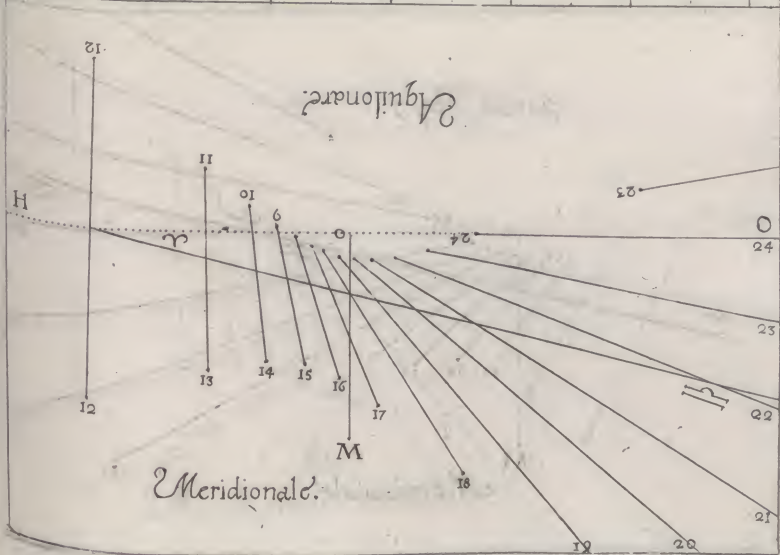


Tab.xxvii Declinatio ad Octas. Gr. 12. Lat.Gr. 45.										
H. Merid.	Tropic. Capric.		Aequinoctialis.			Tropic. Canceri.			H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	MP.	MG.	MP.	MG.	MP.	M.			
14	103	40 87	47 68	59 71	27 34	16 84	9	10		
15	94	7 37	32 57	51 32	51 22	9 44	35	9		
16	84	33 22	14 45	11 21	4 8	42 32	55	8		
17	74	29 14	43 29	57 15	25 354	10 28	58	7		
18	62	2 10	8 11	44 12	32 339	18 29	23	6		
19	45	19 7	1 350	48 11	38 324	57 34	26	5		
20	19	8 5	2 329	26 12	9 311	46 48	51	4		
21	341	39 4	28 310	24 14	33 399	55 105	36	3		
22	307	14 5 ¹	33 294	34 19	25			2		
23	284	53 7	56 281	25 29	14			1		
24	270	0 11	28 270	0 56	27			24		
25	257	15 16	48 259	28 550	4			23		
26	248	40 26	1		3			22		
27	239	15 47	5		8			21		
28	229	34 154	13		00			20		
							Alt.	Pol.		
							P.	M.		
							12	32		

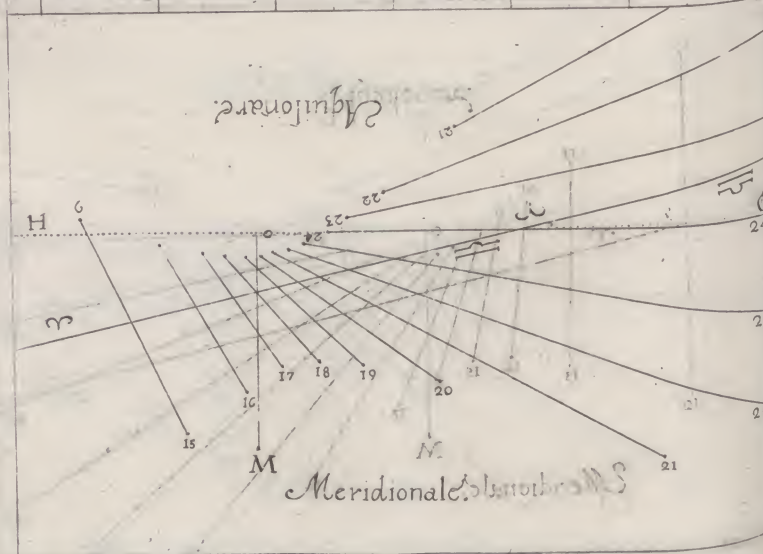


Tab.xxv	
H. Merid.	G.
26	250
25	260
24	270
23	279
22	290
21	303
20	323
19	353
18	32
17	62
16	82
15	45
14	106
13	115
12	125
11	134

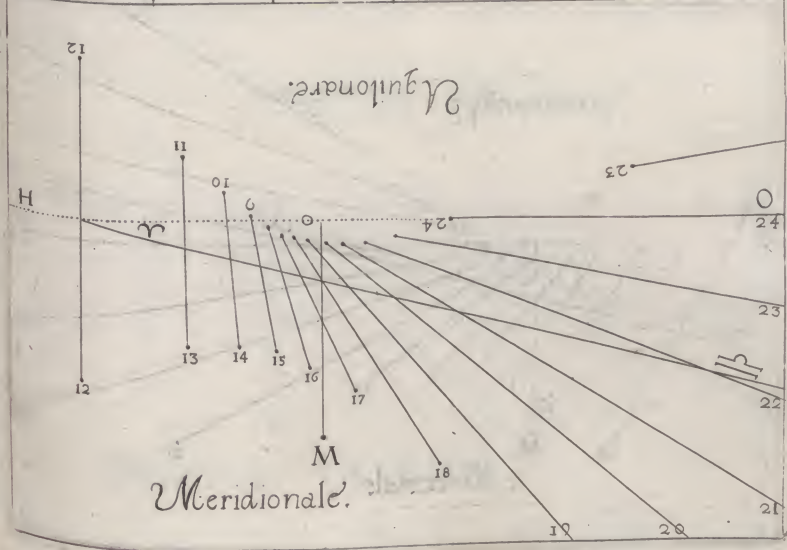
Tab. xxvii. Declinatio ad Ortum. Grad. 13. Lat. Gr. 45.									
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Merid.		
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.			
	G.	MP.	MG.	MP.	MG.	MP.		M.	
26	250	43	1240	49					22
25	260	34	62	33					23
24	270	0	30	40					24
23	279	42	19	6					1
22	290	22	12	54	290	56	79	30	2
21	303	44	8	54	302	1	34	38	3
20	323	2	6	10	314	25	21	43	4
19	353	38	4	35	329	19	15	49	5
18	32	33	4	37	347	20	12	39	6
17	62	55	6	13	8	13	11	28	7
16	82	2	9	0	29	41	11	58	8
15	45	18	13	2	49	2	14	11	9
14	106	7	19	21	65	11	18	44	10
13	115	37	31	10	78	29	27	52	11
12	128	1	63	42	90	0	51	59	12
11	134	53	644	41	100	27	307	46	13



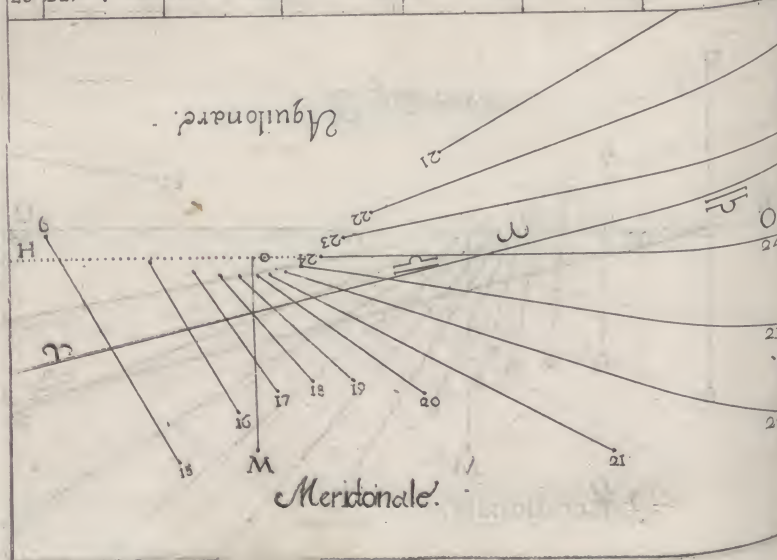
Tab. xxviii.		Declinat. ad Occasu. Grad. 15. Lat. Gr. 45.										H. Aguil.	
H. Merid.		Tropic. Capric.		Aguinoctialis.				Tropic. Cancr.					
		Arcus.	Umbra.	Arcus.	Umbra.	Arcus.	Umbra.	Arcus.	Umbra.				
		G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.			
14	103	38	103	11	69	4	79	30	34	22	91	10	
15	94	6	39	54	57	59	34	37	22	24	45	49	
16	84	38	23	11	45	35	21	43	9	3	33	12	
17	74	29	15	16	30	41	15	43	354	35	28	50	
18	62	36	10	27	12	40	12	39	339	42	28	53	
19	46	36	7	11	351	47	11	28	325	15	33	24	
20	22	20	5	6	330	19	11	57	311	56	46	20	
21	345	40	4	25	310	58	14	11	209	59	94	20	
22	308	41	5	15	294	40	18	44				2	
23	285	28	7	39	281	31	27	52				1	
24	270	0	11	4	270	0	51	59				24	
25	258	21	16	10	259	33	307	46				23	
26	248	30	24	53								22	
27	239	6	44	16								21	
28	229	30	133	35								20	
											Alt. Pol.		
											P. M.		
											12	39	



Tab. XXVIII.		Declinat. ad Ortum Grad. 14. Lat. Gr. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	M.				
26	250	45	1967	10									22
25	260	36	68	17									23
24	270	0	32	23									24
23	279	31	19	54									1
22	289	55	13	20	290	54	88	37					2
21	302	59	9	10	301	47	36	15					3
20	321	32	6	20	314	3	22	20					4
19	351	2	4	37	328	38	16	0	320	46	206	3	5
18	30	25	4	29	346	25	12	43	332	2	59	52	6
17	62	2	5	59	7	11	11	23	344	40	37	43	7
16	81	51	8	40	28	50	11	43	358	37	30	6	8
15	95	32	12	34	48	31	13	48	13	25	28	1	9
14	106	24	18	39	64	55	18	6	28	4	30	0	10
13	115	45	29	45	78	25	26	36	42	2	37	23	10
12	125	8	58	53	90	0	48	8	54	52	68	53	12
11	134	53	89	47	100	34	213	32	66	11	193	27	13

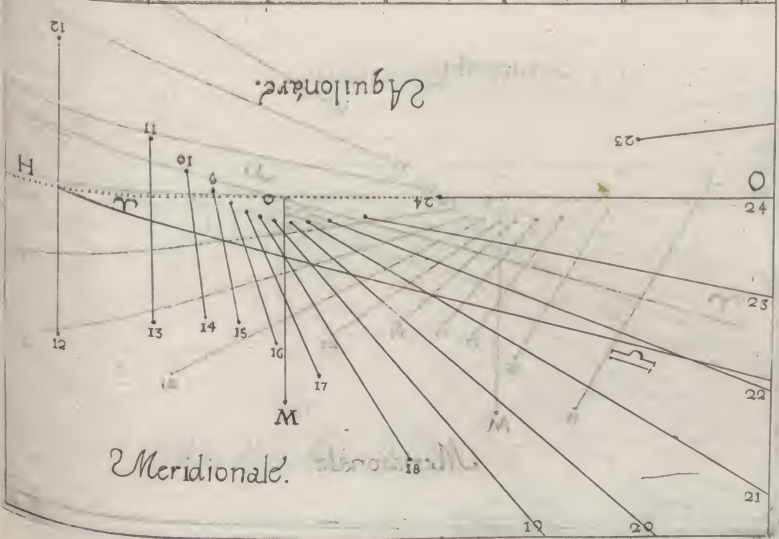


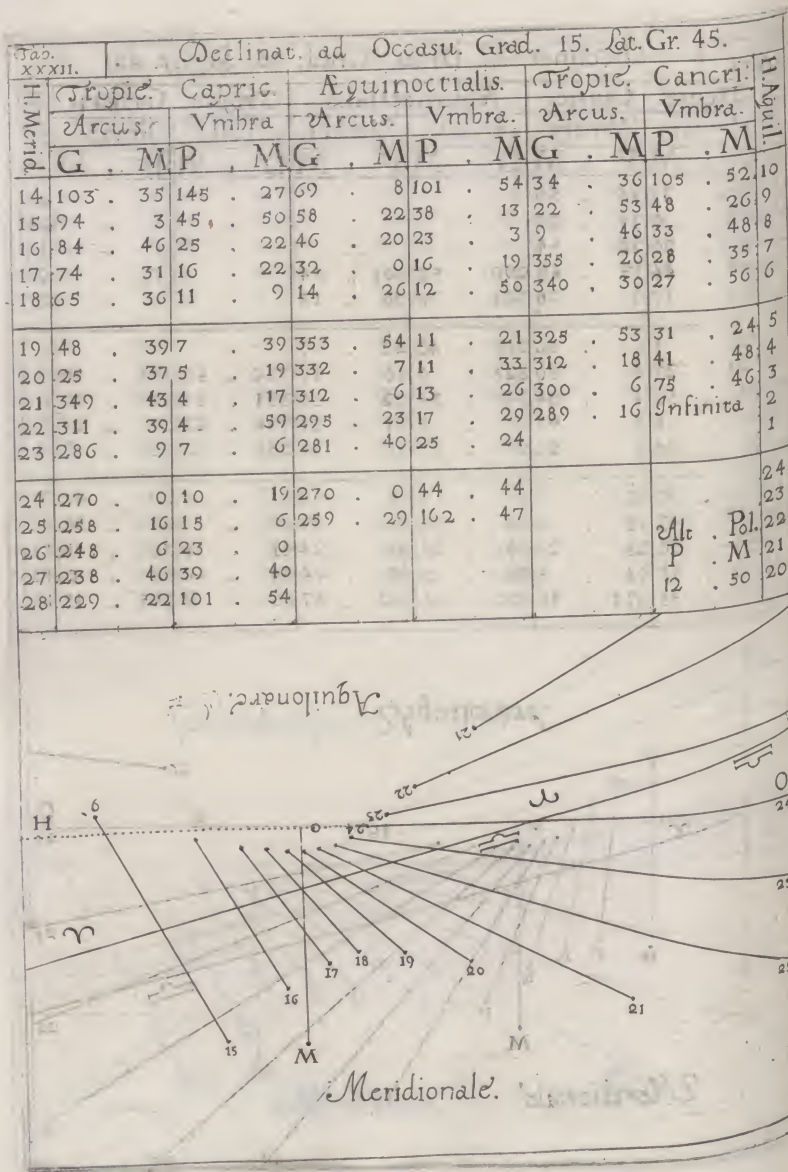
Tab. xxx.		Declinat. ad Occasu. Grad. 14. Lat. Gr. 45.										H. Merid.	
		Tropie. Capric.		Aequinoctialis.				Tropie. Cancr.				H. Aquil.	
		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
		G.	MP	MG	MP	MG	MP	MG	MP	M			
14	103	36	125	56	69	688	37	34	29	97	44	10	
15	94	4	45	33	89	13	36	15	22	39	46	58	9
16	84	42	24	13	45	57	22	20	9	24	33	29	8
17	74	22	15	47	31	22	16	0	355	0	28	41	7
18	63	6	10	47	13	35	12	43	340	5	28	23	6
19	47	32	7	26	352	49	11	23	325	33	32	21	5
20	23	32	5	12	331	10	11	43	312	6	43	55	4
21	346	54	4	20	311	29	13	48	300	3	82	56	3
22	310	1	5	10	295	5	18	6					2
23	285	44	7	22	281	35	26	36					1
24	270	0	10	41	271	0	48	8					24
25	258	20	15	38	259	26	213	32					23
26	248	20	23	56									22
27	238	57	41	51									21
28	229	27	115	48									20



45.		
ri	H. Aquil.	
bra.	M.	
	44.10	
	58.9	
	29.8	
	41.7	
	23.6	
	21.5	
	55.4	
	36.3	
	2.2	
	1.1	
	24.	
	Pol. 23	
	M. 22	
	43.21	
	20	

Declinat. ad Ortu. Grad. 15. Lat. Gr. 45.										
Tropie. Capric.		Aguinoctialis.		Tropie. Cancr.						
Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.					
G. M P . M	G. M P . M	G. M P . M	G. M P . M	G. M P . M	G. M P . M					
25 260 . 37 76 . 59										23
24 270 . 0 34 . 20										24
23 279 . 26 20 . 44										1
22 289 . 44 13 . 48	290 . 52 101 . 54									2
21 302 . 17 9 . 28	301 . 38 38 . 13									3
20 320 . 1 6 . 30	313 . 40 23 . 3									4
19 347 . 27 4 . 50	328 . 0 16 . 19	320 . 45 197 . 10								5
18 27 . 56 4 . 24	345 . 34 12 . 50	331 . 54 62 . 39								6
17 61 . 1 5 . 46	6 . 6 11 . 21	344 . 22 38 . 21								7
16 81 . 38 8 . 20	27 . 53 11 . 33	358 . 12 30 . 29								8
15 95 . 30 12 . 8	47 . 54 13 . 26	13 . 0 27 . 43								9
14 106 . 42 18 . 0	64 . 37 17 . 29	27 . 52 29 . 18								10
13 115 . 58 28 . 29	78 . 20 25 . 24	41 . 58 36 . 1								11
12 123 . 16 54 . 8	90 . 0 44 . 44	54 . 46 55 . 0								12
11 134 . 35 298 . 40	100 . 31 162 . 47	66 . 9 145 . 15								13

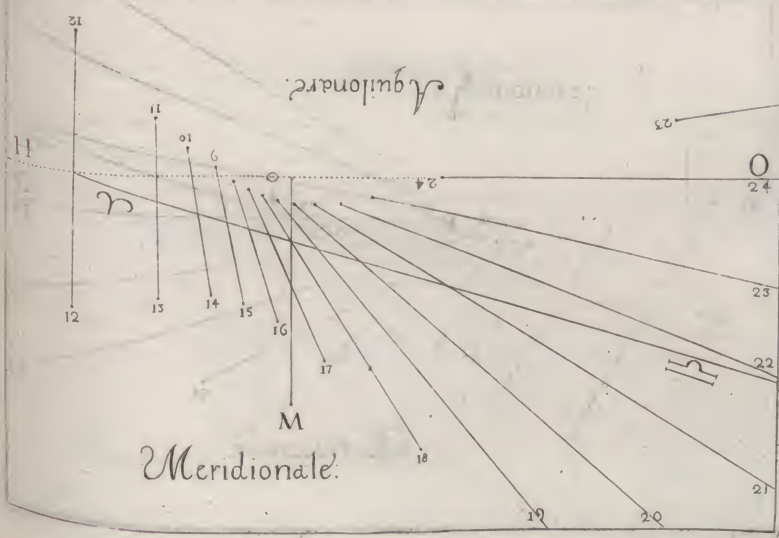




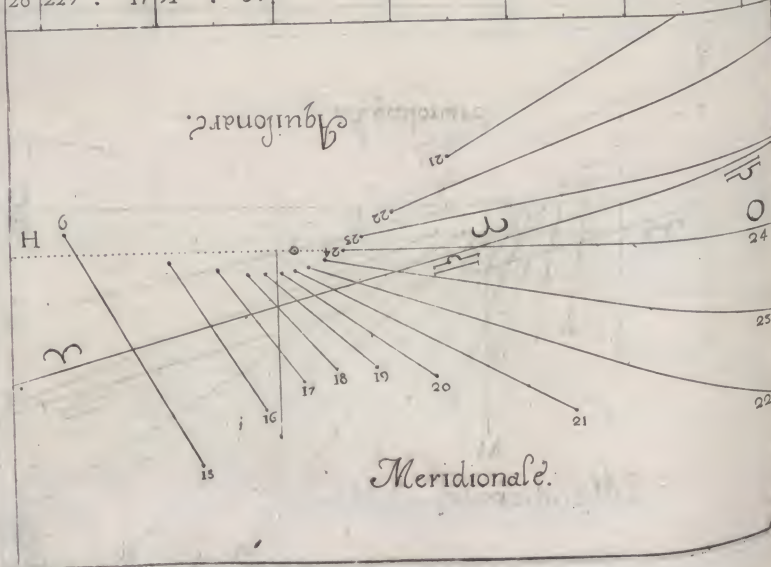
15.	
cri.	H. Aquil.
bra.	
M.	
52.10	
26.9	
48.8	
35.7	
56.6	
24.5	
48.4	
46.3	
nita	2
1	
	24
	23
Pol.	22
M.	21
50	20

Tab. XXXIII. Declinatio ad Ori. Gra. 16. Lat. 45.

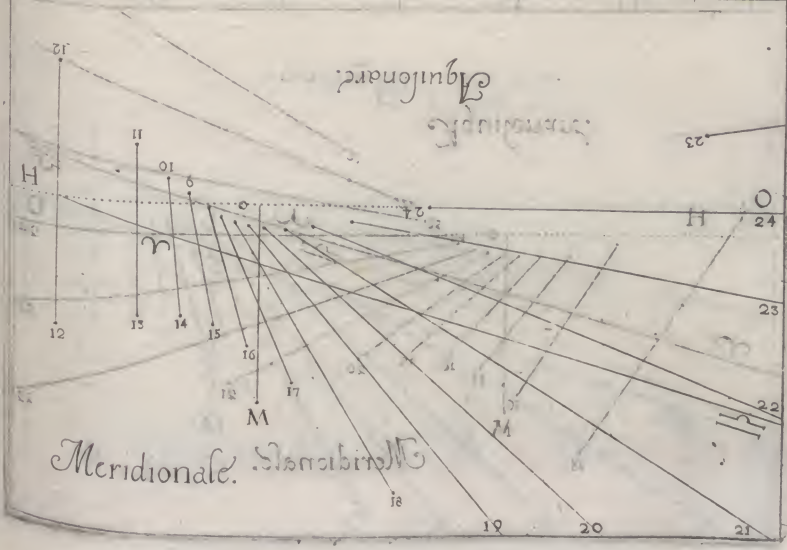
H. Merid.	Tropic. Capric.		Equinoctialis.		Tropic. Cancr.		H. Aquil.
	Arcus.	Umbra.	Arcus.	Umbra.	Arcus.	Umbra.	
G.	MP.	MG.	MP.	MG.	MP.	M.	
25	260	40 85	23				23
24	270	0 36	15				24
23	279	16 21	34				1
22	289	35 14	16	290	51 118	8	2
21	301	36 9	45	301	27 40	15	3
20	318	30 6	40	313	20 23	46	4
19	345	59 4	43	327	23 16	38 320	41 335
18	25	35 4	16	344	38 12	57 331	41 65
17	60	8 5	32	5	3 11	18 344	4 39
16	81	25 8	3	26	59 11	21 357	47 30
15	95	36 11	48	47	18 13	6 12	34 27
14	106	26 17	20	64	18 16	55 27	34 28
13	116	8 27	15	78	13 24	23 41	42 34
12	125	23 51	18	90	0 41	51 54	37 51
11	134	57 214	39	100	34 131	51 66	7 127



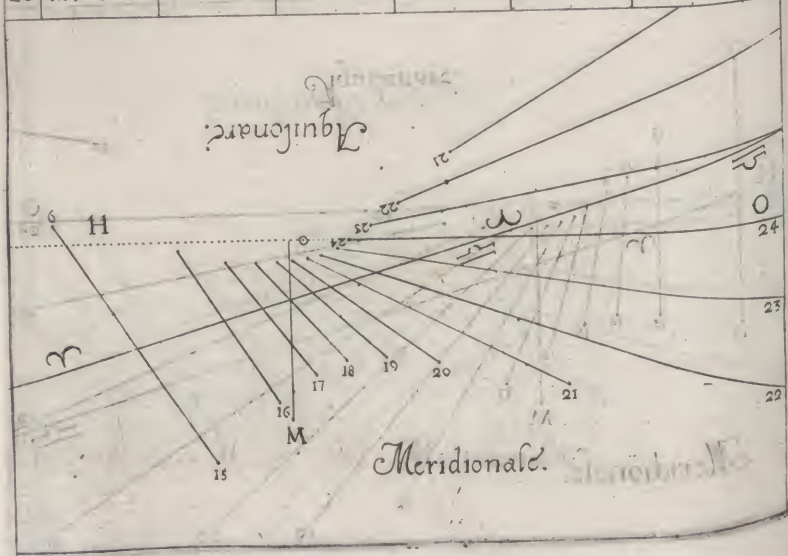
Tab. XXXIII.		Declinat: ad Occas. Gr: 16. Lat. 45.											
H. Merid.	Tropic. Capri.				Aguinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
14	103	34	184	44	69	9	118	8	34	41	117	8	10
15	94	2	49	6	58	33	40	15	23	6	49	47	9
16	84	47	26	30	46	40	23	46	10	7	34	6	8
17	74	50	16	57	32	37	16	38	355	41	28	27	7
18	64	35	11	29	15	25	12	57	340	44	27	28	6
19	49	36	7	53	354	57	11	18	326	8	30	29	5
20	27	39	5	26	333	1	11	21	312	30	39	50	4
21	352	26	4	15	312	42	13	6	300	13	68	17	3
22	313	13	4	48	295	42	16	55	289	16	438	45	2
23	286	41	6	49	281	47	24	20					1
24	270	0	9	57	270	0	41	51					24
25	258	0	14	34	259	26	131	51					23
26	247	56	22	6									22
27	238	38	37	34									21
28	229	17	91	39									20
						</							



Tab. xxxv.		Declinatio ad Ort. Gra 17 Lat. Gr. 45.												H. Aquilo
H. Merid.		Tropic. Capric.			Aequinoctialis.				Tropic. Cancri.					H. Aquilo
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
G. M P. MC		G. M P. MC		G. M P. MC		G. M P. MC		G. M P. MC		G. M P. MC				
8 10	25 260	39	98	12										23
47 9	24 270	0	38	34										24
6 8	23 279	15	22	28										1
27 7	22 289	9	14	44	290	51	140	57						2
28 6	21 301	0	10	4	301	29	42	33						3
29 5	20 316	25	6	50	313	0	24	32						4
50 4	19 343	36	4	48	326	42	17	9	320	40	485	17	5	
17 3	18 22	58	4	10	343	42	13	4	331	32	68	45	6	
45 2	17 58	50	5	18	4	0	11	16	343	45	39	41	7	
1	16 81	13	7	44	26	2	11	11	357	27	30	18	8	
24	15 75	45	11	19	46	40	12	46	12	9	27	9	9	
23	14 106	56	16	43	64	1	16	22	27	8	28	1	10	
22	13 116	22	26	8	78	7	23	19	41	26	33	24	11	
21	12 125	32	48	21	90	0	39	15	54	28	48	25	12	
20	11 134	59	180	31	100	35	111	4	66	4	109	17	13	



Tab. XXXVI.		Declinatio ad Occas. Gra. 17. Lat. Gr. 45.																			
H Merid.	Tropic.				Capric.				Aequinoctialis.				Tropic.				Cancer.				H Aquilio.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P	M	G.	M	P	M	G.	M	P	M	G.	M	P	M	G.	M	P	M	
14	103.	32	248	22	69	.	9	140	57	34	.	44	129	.	20	10					
15	94	2	54	17	58	.	31	42	33	23	.	18	51	.	22	9					
16	84	50	27	48	47	.	0	24	32	10	.	27	34	.	27	8					
17	75	20	17	33	33	.	18	17	9	356	.	15	28	.	23	7					
18	64	27	11	51	16	.	18	13	4	341	.	19	27	.	5	6					
19	50	32	8	.	6	356	.	0	11	.	17	326	.	29	29	.	39	5			
20	29	30	5	.	32	333	.	58	11	.	11	312	.	42	38	.	8	4			
21	355	16	4	.	13	313	.	20	12	.	46	300	.	19	63	.	13	3			
22	315	2	4	.	38	295	.	59	16	.	22	289	.	17	274	.	54	2			
23	287	0	6	.	33	281	.	53	23	.	20							1			
24	270	0	9	.	36	270	.	0	39	.	15							24			
25	257	50	14	.	4	259	.	25	11	.	4							23			
26	247	58	21	.	18													22			
27	238	26	35	.	49													21			
28	229	10	83	.	50													20			

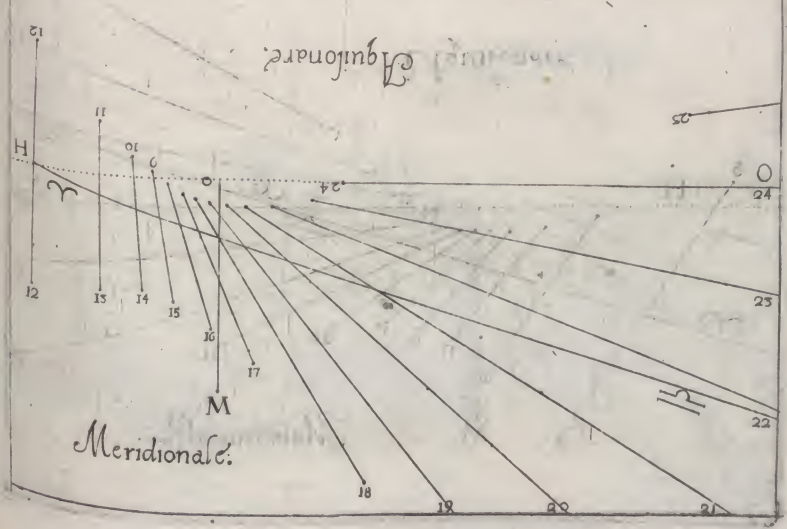


Tab. XXXVII.		H. Merid.	
		G	A
		G	
25	260		
24	270		
23	279		
22	289		
21	300		
20	316		
19	341		
18	20		
17	57		
16	80		
15	95		
14	106		
13	116		
12	125		
11	135		

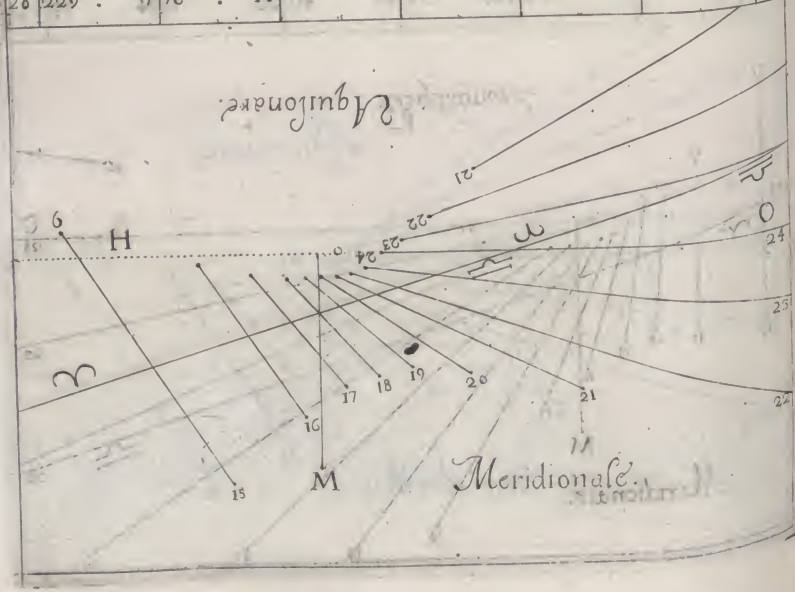
260. xxxvii.

Declinatio ad Ortum Gra. 18. Lat. Cir. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo.
	Arcus.		Arcus.		Arcus.		
	Umbra.		Umbra.		Umbra.		
	G.	M P	M G	M P	M G	M P	M
25	260	41 113	33				
24	270	0 41	0				23
23	279	6 23	25				24
22	289	6 15	15 290	50 174	32		1
21	300	0 10	21 301	9 45	9		2
							3
20	316	7 7	3 312	39 25	21		
19	341	45 4	52 326	12 17	19 320	38 877	45 5
18	20	15 4	5 342	49 13	13 331	25 72	14 C
17	57	39 5	6 2	56 11	15 343	28 40	26 7
16	80	58 7	27 25	3 11	1 357	1 30	22 8
15	95	47 10	57 46	0 12	27 11	42 26	53 9
14	106	20 16	9 63	39 15	51 26	44 27	25 10
13	116	33 25	6 78	0 22	23 41	10 32	13 11
12	125	40 45	25 90	0 36	56 54	19 45	28 12
11	135	2 149	10 100	37 95	40 66	1 94	59 13



Tab. xxxviii.		Declinatio. ad Occas Gra. 18. Lat. Gra 45.														H. Merid.	H. Aquino.
Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.									
Arcus		Umbra.		Arcus.		Umbra		Arcus.		Umbra.							
G.	M	P.	M	G.	M	P.	M	G.	M	P.	M						
14	103	33	385	25	69	10	174	32	34	50	145	58	10				
15	94	0	57	42	58	51	45	9	23	32	53	2	9				
16	84	52	29	8	47	21	25	21	10	48	34	51	8				
17	75	24	18	13	33	48	17	19	356	42	28	18	7				
18	64	57	12	14	17	11	13	13	341	45	26	41	6				
19	51	27	8	21	257	4	11	15	326	52	28	53	5				
20	31	24	5	40	334	57	11	1	312	56	36	26	4				
21	358	7	4	12	314	0	12	27	300	25	58	2	3				
22	316	56	4	28	296	21	15	51	289	18	202	2	2				
23	387	47	6	18	282	0	22	23					1				
24	270	0	9	16	270	0	36	56					24				
25	253	39	13	36	259	23	95	40					23				
26	247	32	20	30									22				
27	238	19	34	1									21				
28	229	7	76	11									20				
												Alt. Pol.					
												P. M					
												13	13				

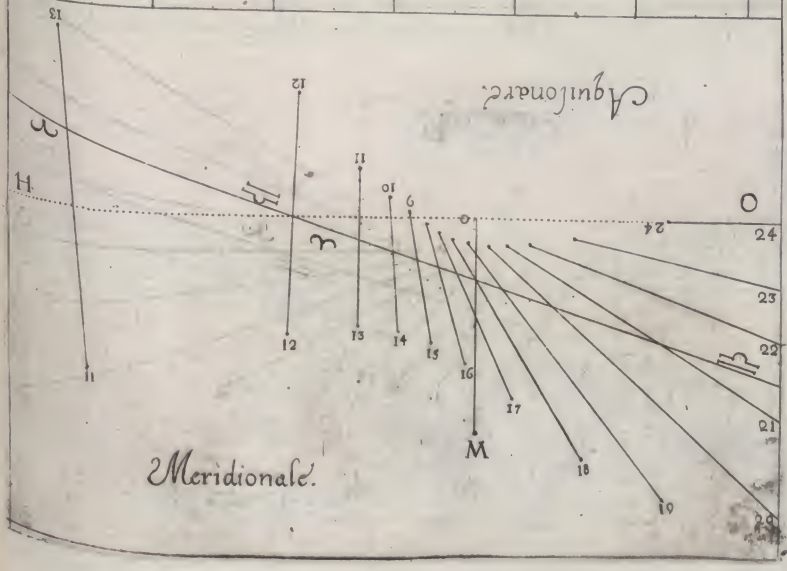


Tab. xxxviii.		H. Merid.		H. Aquino.	
		Arc		G.	
25	260				
24	270				
23	279				
22	288				
21	299				
20	314				
19	338				
18	17				
17	56				
16	80				
15	95				
14	107				
13	116				
12	126				
11	135				

Tab. XXXVIII.

Declinatio ad Ort. Gra 19 Gr. Gr. 45.

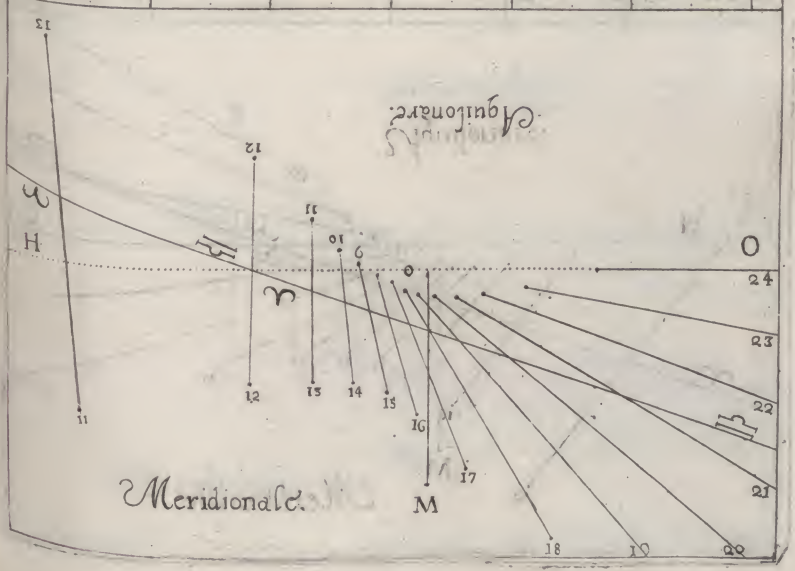
Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo
Arcus.	Umbra.	Arcus.	Umbra.	Arcus.	Umbra.	
G.	M P.	M G.	M P.	M G.	M P.	M
25 260 . 42	142 . 4					23
24 270 . 0	43 . 59					24
23 279 . 4	24 . 29					1
22 288 . 38	15 . 47	290 . 49	232 . 53			2
21 299 . 49	10 . 41	301 . 2	48 . 8			3
20 314 . 56	7 . 15	312 . 19	26 . 15			4
19 338 . 56	4 . 57	325 . 37	17 . 42	320 . 40	1719 . 2	5
18 17 . 24	4 . 0	341 . 57	13 . 22	331 . 14	76 . 22	6
17 56 . 17	4 . 53	1 . 50	11 . 14	343 . 12	41 . 11	7
16 80 . 39	7 . 10	24 . 1	10 . 51	356 . 38	30 . 27	8
15 95 . 56	10 . 34	45 . 18	12 . 8	11 . 57	26 . 40	9
14 107 . 3	15 . 37	63 . 18	15 . 19	26 . 19	26 . 49	10
13 116 . 48	24 . 8	77 . 53	21 . 27	40 . 52	31 . 8	11
12 126 . 51	43 . 6	90 . 0	34 . 47	54 . 9	43 . 6	12
11 135 . 7	131 . 37	100 . 39	84 . 37	65 . 57	85 . 12	13



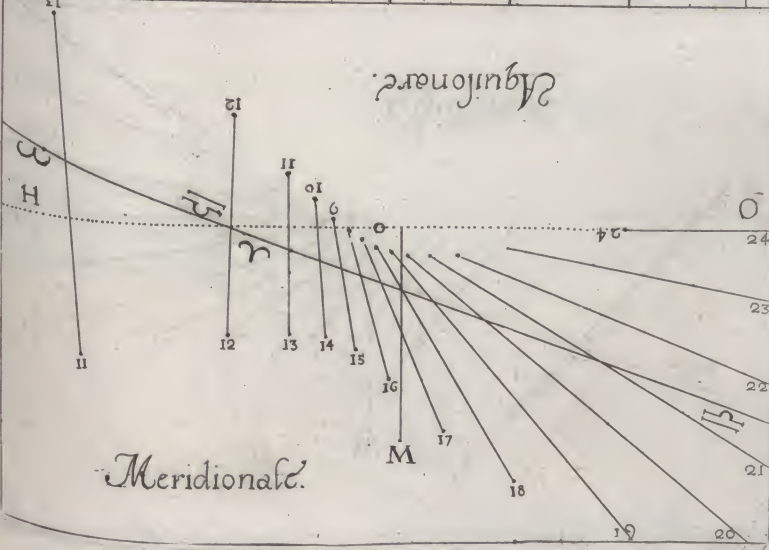
xxx ^{ob.} x.		Declinatio. ad. Occas. Gra. 19. Lat. Gr. 45.												H. An.	
H. Merid.	Tropic. Capric.			Aequinoctialis.				Tropic. Cancr.				H. An.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.						
	G.	M	P.	G.	M	P.	M	G.	M	P.	M				
14	103.	34	762.	4	69.	11	232.	53	34.	52	169.	11	10		
15	94.	0	63.	4	58	58	48.	8	23.	42	54.	50	9		
16	84.	55	30.	44	47.	41	26.	15	11.	7	35.	12	8		
17	75.	40	18.	36	34.	23	17.	42	357.	6	28.	13	7		
18	65.	18	12.	38	18.	3	13.	22	342.	10	26.	18	6		
19	52.	19	8.	35	358.	10	11.	14	327.	13	28.	7	5		
20	33.	3	5.	49	335.	59	10.	51	315.	10	34.	57	4		
21	0.	56	4.	13	314.	42	12.	8	300.	31	54.	10	3		
22	319.	24	18.	296.	42	13.	20	289.	20	164.	35	2	2		
23	288.	23	6.	2	282.	7	21.	27							
24	270.	0	8.	56	270.	0	34.	147					24		
25	257.	29	13.	8	259.	21	83.	37					23		
26	247.	13	20.	16									22		
27	238.	4	32.	32									21		
28	228.	58	70.	35									20		
												Alt. Pol. P. M. 13. 22			

cri.	bra.	M
11	10	
50	9	
12	8	
13	7	
18	6	
7	5	
57	4	
10	3	
35	2	
1	1	
	24	
	23	
Pbl.	22	
M.	21	
22	20	

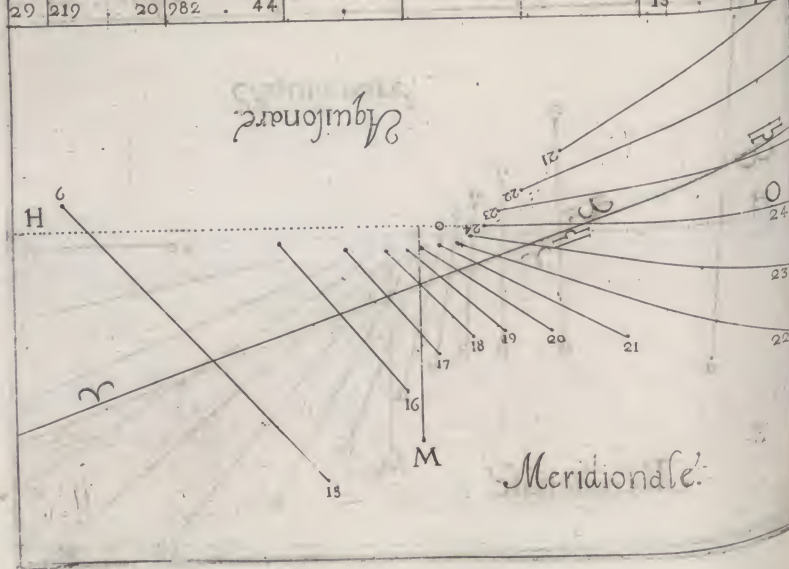
Tab. XXXI.		Declinatio ad Ort. Gra. 20. Lat Gra. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo.
	Arcus.		Vmbra.		Arcus.		Vmbra		Arcus.		Vmbra.		
	G.	M P	M	G	M P	M	G	M P	M	G	M P	M	
25	260	41	154	32									23
24	269	48	27	55									24
23	278	51	25	45									1
22	287	45	16	26	290	34	358	39					2
21	299	12	11	4	300	47	51	51					3
20	313	29	7	30	311	54	27	19					4
19	336	21	5	5	324	54	18	9					5
18	13	57	3	56	340	56	13	33	331	0	81	40	6
17	54	24	40	0	32	11	13	342	47	42	12	7	
16	80	15	6	52	22	46	10	41	356	8	31	7	8
15	95	39	10	9	44	23	11	48	10	39	26	26	9
14	106	40	15	0	62	46	14	47	25	47	26	16	10
13	116	52	23	3	77	38	20	33	40	16	30	7	11
12	125	48	40	7	90	0	32	44	53	52	40	22	12
11	135	15	112	43	100	34	73	43	65	48	74	39	13



Tab. XXXXIII.		Declinatio ad Ort. Gra. 21. Lat. Gr. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	MP.	M	G.	MP.	M	G.	MP.	M				
25	260.	44	250.	24									23
24	270.	0	51.	26									24
23	278.	56	26	47									1
22	288.	4	16	56	290.	41	644.	41					2
21	298.	46	11	21	300.	50	55.	11					3
20	312.	41	7	40	311.	44	28	11					4
19	334.	30	5	8	324.	32	18	27					5
18	11	29	3	53	340.	15	13	40	330.	59	85.	53	6
17	53	59	4	30	359.	51	11	13	342.	39	42.	51	7
16	80	6	6	36	21	56	10	33	355.	51	30.	40	8
15	96	10	9	50	43	50	11	33	10	22	26	12	9
14	107	28	14	34	62	39	14	19	25	30	25	46	10
13	117	15	22	22	77	39	19	50	40	16	29	8	11
12	126	12	38	47	90	0	31	11	53	49	38	47	12
11	135	16	102	56	100	42	67	3	65	50	68	16	13
10									76	27	654.	54	14

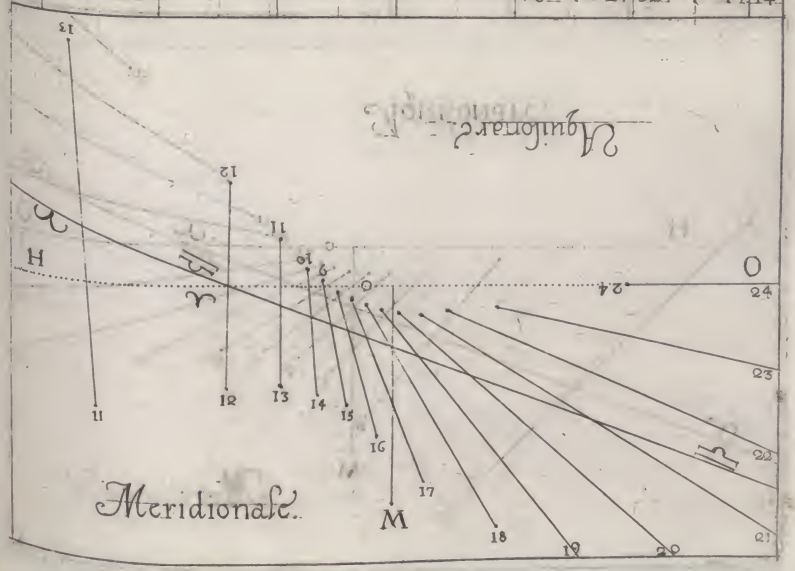


Tab. xxxxxi.		Declinatio ad Octas. Gra. 21. lat. Gr. 45.											
H. Merid.	Tropic. Capric.			Aequinoctialis.						Tropic. Cancr.			H. Aquilo.
	Arcus.		Vmbra.	Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M	P	M	G.	M	P	M	G.	M	P	M	
14					69	19	644	41	34	57	288	21	10
15	93	59	79	2	59	10	55	11	24	7	58	51	9
16	84	56	34	12	48	16	28	11	11	47	36	2	8
17	76	0	20	26	35	28	18	20	357	58	28	6	7
18	66	2	13	28	19	45	13	40	343	3	25	35	6
19	55	57	9	7	0	9	11	13	327	57	26	42	5
20	36	24	6	7	338	4	10	33	313	39	32	14	4
21	6	38	4	14	316	10	11	33	300	45	47	19	3
22	325	35	4	0	297	21	14	19	289	23	111	28	2
23	289	43	5	33	282	21	19	50					1
24	270	0	8	17	270	0	31	11					24
25	257	6	12	16	259	18	67	3					23
26	246	44	18	24									22
27	237	39	29	45									21
28	228	43	60	44									20
29	219	20	982	44									19

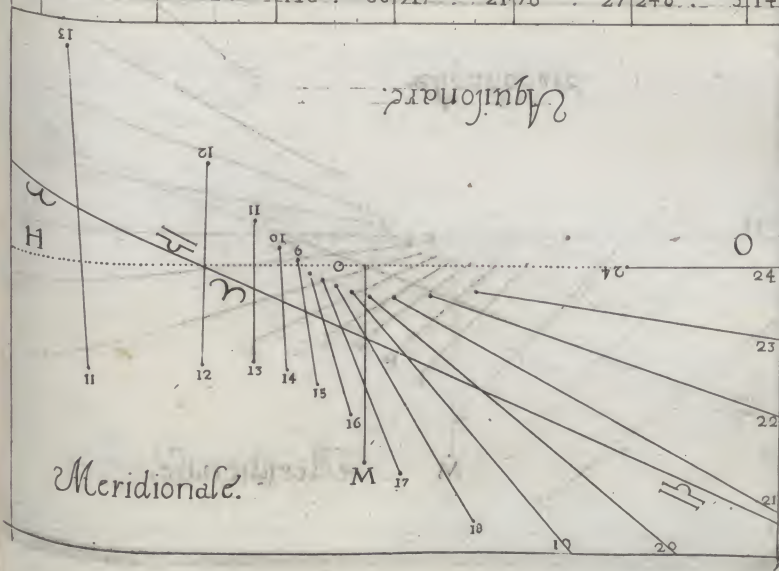


5.	ri.	ra.	M
21	10	51	9
2	8	6	7
35	6	42	5
14	4	19	3
28	2	1	
24			
23			
22			
21			
20			
19			
18			
17			
16			
15			
14			
13			
12			
11			
10			

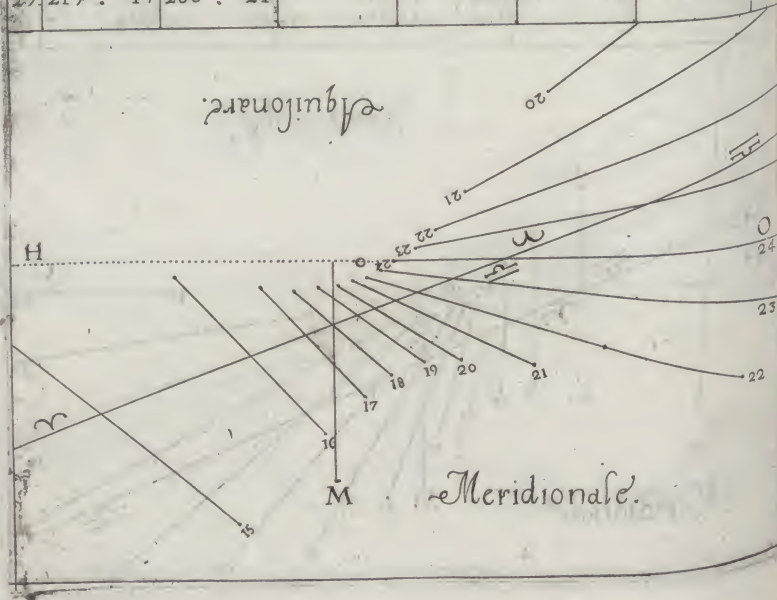
Declinatio ad Ort. Gra. 22. Lat. 45.									
Tropic. Capric.	Aequinoctialis.	Tropic. Cancr.							
Arcus.	Umbra	Arcus.	Umbra	Arcus.	Umbra				
G.	MP	MG	MP	MG	MP	M			
25 260	44 332	33							23
24 270	0 54	38							24
23 279	11 28	1							1
22 287	52 17	31 220	0 3761	43					2
21 298	29 11	42 300	40 59	15					3
20 311	31 7	53 311	27 29	10					4
19 332	22 5	15 324	0 18	53					5
18 8	21 3	48 339	27 13	49 330	51 91	9			6
17 51	48 4	10 358	39 11	14 342	57 43	40			7
16 79	49 6	21 20	55 10	28 355	27 30	45			8
15 96	18 9	30 43	7 11	17 9	55 25	58			9
14 107	43 14	5 62	11 13	57 25	5 25	16			10
13 117	32 21	33 77	32 19	7 39	57 28	12			11
12 126	22 36	52 20	0 19	42 53	38 36	52			12
11 135	20 52	11 100	46 61	16 65	46 62	22			13
10				76	27 327	17			14



Tab. XXXVII													Declinatio ad Ort. Gra. 23. Lat. 45.												
H. Merid.	Tropic' Capric.				Æquinoctialis.				Tropic' Cancr.				H. Aquilo.												
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.														
	G.	M P	M	G	M P	M	G	M P	M	G	M P	M													
25	260	44	634	48										23											
24	270	0	60	28										24											
23	278	48	29	28										1											
22	287	41	18	10										2											
21	297	49	12	4	298	36	64	14						3											
20	310	41	8	7	311	13	30	19						4											
19	330	28	5	22	323	31	19	20						5											
18	5	23	3	49	338	40	14	0	330	45	98	6	6												
17	49	52	4	7	357	36	11	15	343	8	44	38	7												
16	79	28	6	6	19	50	10	17	355	4	30	55	8												
15	26	28	9	10	42	19	11	1	9	29	25	46	9												
14	108	6	13	37	61	47	13	31	24	39	24	43	10												
13	117	47	20	48	77	23	18	24	39	38	27	22	11												
12	126	36	35	14	90	0	28	15	53	26	35	14	12												
11	135	27	84	42	100	48	56	3	65	42	57	56	13												
10					110	38	917	21	76	27	248	3	14												



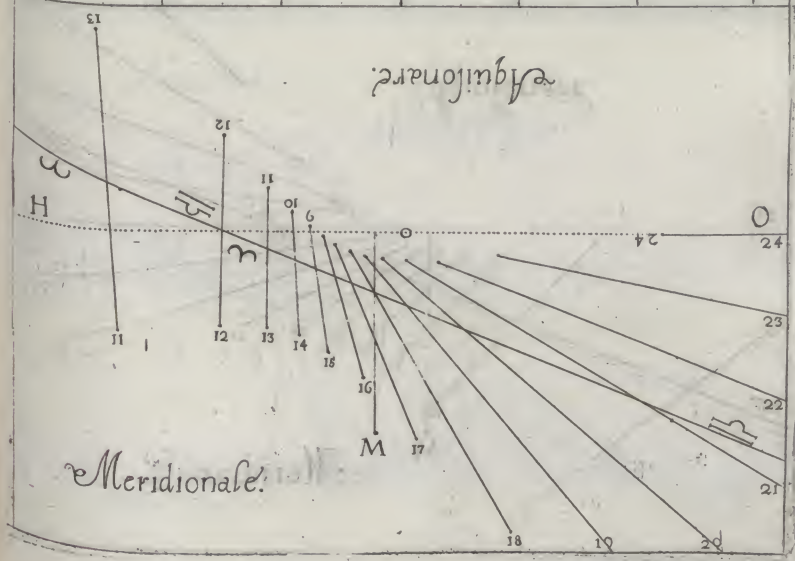
Tab. XXXVIII		Declinatio ad Occas. Gra. 23. Lat. 45.										H. Merid.	
Tropic. Capric.		Aequinoctialis.				Tropic. Canceri.				H. Aquile		H. Merid.	
Arcus. Umbra.		Arcus. Umbra.		Arcus. Umbra.		Arcus. Umbra.		Arcus. Umbra.		Arcus. Umbra.		Arcus. Umbra.	
G.	MP.	MG.	MP.	MG.	MP.	G.	MP.	MG.	MP.	M.		G.	MP.
14						25		3	689	16	10	25	260
15	03	57	103	24	59	24	64	14	24	28	60	24	270
16	85	0	38	26	48	47	30	19	12	26	36	23	278
17	76	14	22	6	36	29	19	20	358	49	28	22	287
18	66	34	14	22	21	20	14	0	343	57	24	21	297
19	58	0	9	40	0	24	11	15	328	44	25	20	309
20	39	29	6	26	340	10	10	17	314	11	29	19	328
21	12	10	4	19	317	41	11	1	301	2	42	18	2
22	328	43	3	45	298	13	13	31	289	28	84	17	48
23	291	16	5	5	282	37	18	24				16	79
24	270	0	7	42	270	0	28	15				15	96
25	256	38	11	28	259	12	56	3				14	108
26	246	18	17	10	249	22	917	21				13	118
27	237	13	27	25								12	126
28	228	27	53	22								11	135
29	219	17	288	21								10	



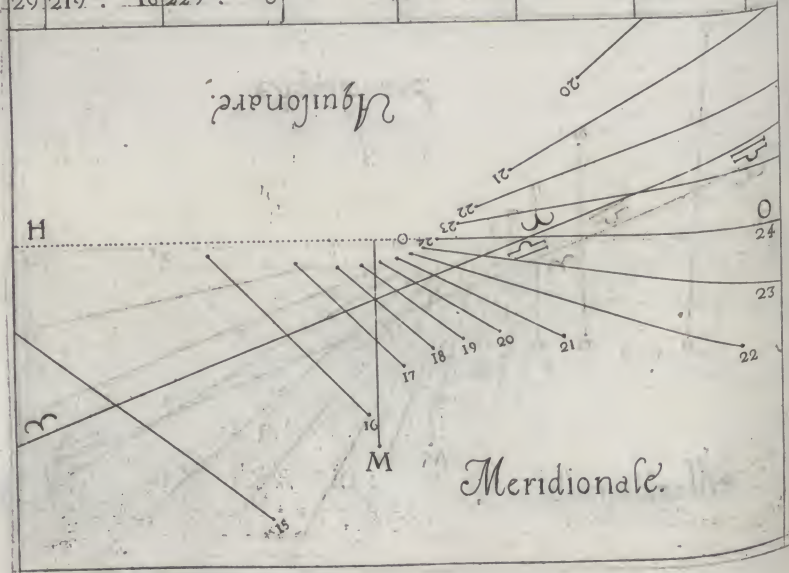
Tab.
XXXXVIII

Declinatio ad Ort. Gra. 24. Lat. 45.

H. Merid.	Tropic. Capric.			Aequinoctialis.				Tropic. Cancr.				H. Aquil.	
	Arcus.		Vmbra.	Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	
25	260	44	6896	29									23
24	270	0	65	55									24
23	278	44	30	55									1
22	287	27	19	35									2
21	297	19	12	27	300	29	69	58					3
20	309	40	8	21	310	57	31	31					4
19	328	31	5	30	323	0	19	47					5
18	2	15	3	48	337	52	14	11	330	39	104	47	6
17	48	3	3	57	356	32	11	16	341	52	45	35	7
16	79	3	5	50	18	44	10	10	354	40	31	1	8
15	96	36	8	51	41	30	10	46	9	0	25	35	9
14	108	21	13	11	61	22	13	6	24	13	24	21	10
13	118	3	20	4	77	15	17	45	39	17	26	33	11
12	126	46	33	38	90	0	26	57	53	13	33	40	12
11	135	33	77	22	100	50	51	46	65	38	53	19	13
10					110	44	408	24	76	25	169	30	14



Declinatio ad Occas. Gra. 24. Lat. 45.													
H Merid.	Tropie. Capric.				Aequinoctialis				Tropie. Cancr.				H. Aquilo
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
14	103.	35	169	30									10
15	93.	57	118	50	59	31	68	58	24	39	66	2	9
16	85.	3	40	46	49	3	31	31	12	44	37	23	8
17	76.	22	23	0	37	0	19	47	359	15	27	59	7
18	67.	0	14	50	22	8	14	11	344	26	24	37	6
19	56.	10	9	57	3	28	11	16	328	49	24	52	5
20	40.	58	6	36	341	16	10	10	314	28	28	51	4
21	14.	53	4	22	318	30	10	46	301	11	39	40	3
22	331	24	3	38	298	38	13	6	289	31	74	55	2
23	202	36	4	54	282	45	17	45					1
24	270	0	7	24	270	0	26	57					24
25	256	17	11	5	259	10	51	46					23
26	246	2	16	36	249	16	408	24					22
27	236	58	26	21									21
28	228	19	50	7									20
29	219	16	229	0									19

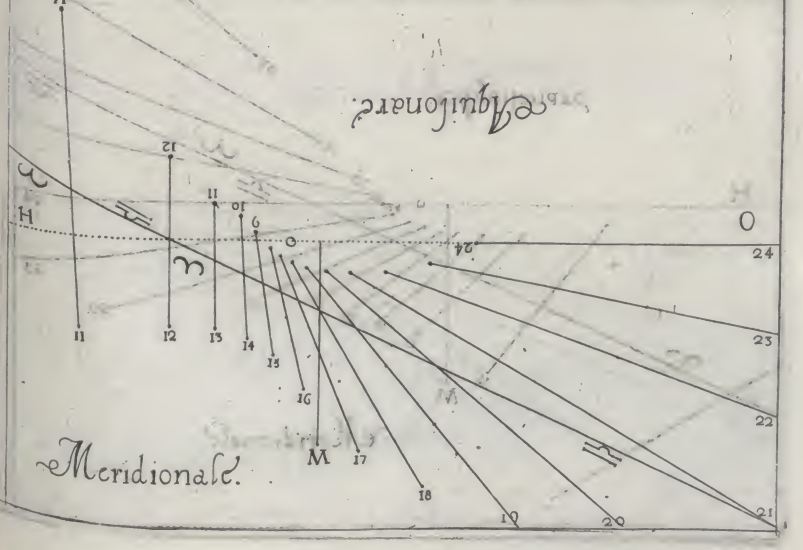


Tab. LI.	
H. Merid.	G.
24	270
23	278
22	287
21	296
20	308
19	326
18	359
17	45
16	79
15	96
14	108
13	118
12	127
11	135
10	

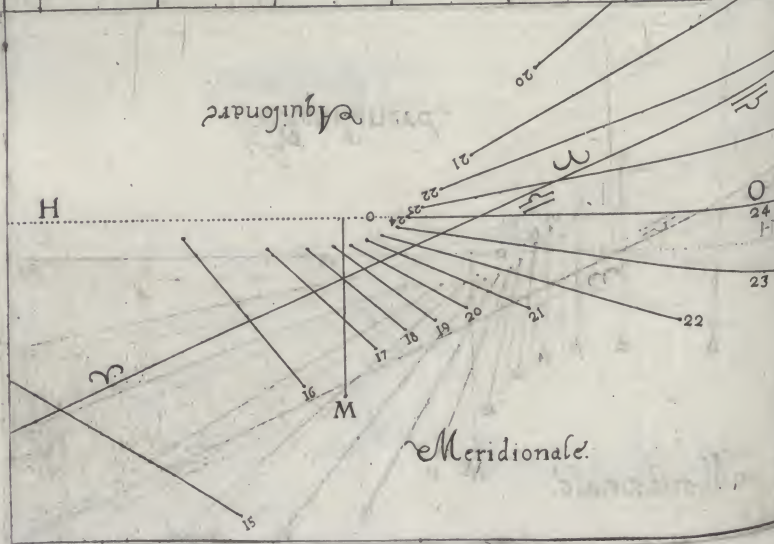


Tab. LI. Declinatio ad Ort. Gra. 25. Lat. 45.

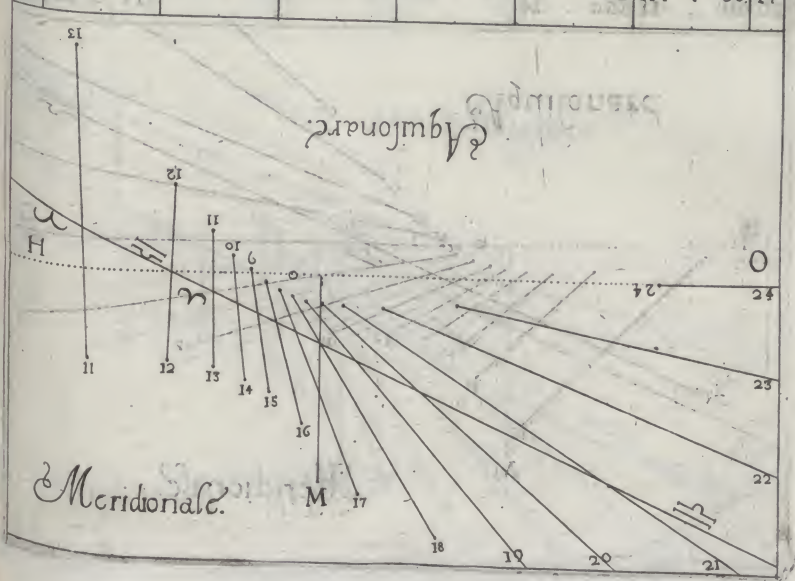
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	MP.	MG.	MP.	MG.	MP.	M.
24	270	0 37	56				24
23	278	40 24	38				1
22	287	20 19	33				2
21	296	50 12	30	300	24 77	74	3
20	308	51 8	34	310	42 32	49	4
19	326	46 5	37	322	34 20	17	5
18	359	8 3	45	337	2 14	23	6
17	45	50 3	47	355	28 11	17	7
16	79	40 5	36	17	35 10	3	8
15	96	46 8	36	40	39 10	31	9
14	108	43 12	44	60	53 12	42	10
13	118	23 19	24	77	5 17	6	11
12	127	0 32	16	90	0 23	42	12
11	135	40 71	38	100	52 47	36	13
10				110	40 260	56	14



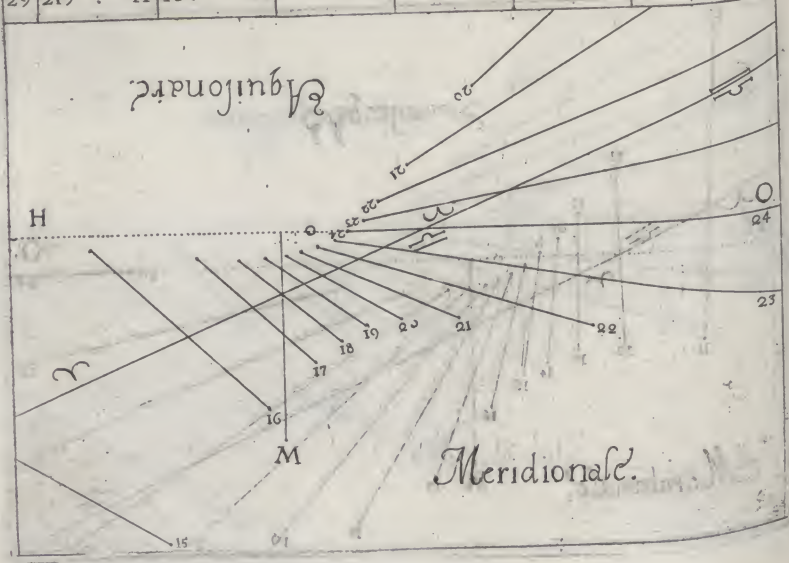
Tab. LII.		Declinatio ad Occas. Gra. 25. Lat. 45.												
H. Merid.	Tropic Capric.				Aequinoctialis.				Tropic Cancr.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M. P.	M.		G.	M. P.	M.		G.	M. P.	M.			
14														
15	93	56	150	15	59	36	77	4	24	49	69	3	1887	15
16	85	4	41	40	49	18	32	49	13	4	37	56		9
17	76	28	24	0	37	26	20	17	359	40	27	59		8
18	67	20	15	18	22	58	14	23	344	54	24	20		7
19	56	35	10	15	4	32	11	17	329	34	24	19		6
20	42	16	6	48	342	25	10	3	314	47	27	53		5
21	17	26	4	26	319	21	10	31	301	20	27	46		4
22	334	28	3	32	299	7	12	42	289	34	68	20		3
23	293	10	4	38	282	55	17	6	279	16	Inlinita.			2
24	270	0	7	7	270	0	23	42						1
25	256	4	10	43	259	8	47	36						
26	246	4	16	4	249	20	260	36						
27	236	43	25	22										
28	228	6	47	36										
29	219	13	194	2										
												Alt. Pol.		
												P. M.		
												14	23	



Tab. III.														Declinatio ad Ort. Gra. 26. Lat. 45.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
H. Meridi.	Tropie. Capric.						Aequinoctialis						Tropie. Cancr.						H. Aquilo																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	Arcus.			Umbra.			Arcus.			Umbra.			Arcus.			Umbra.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	G.	M	P	M	G.	M	P	M	G.	M	P	M	G.	M	P	M																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
24.	270	0	81	55																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															</

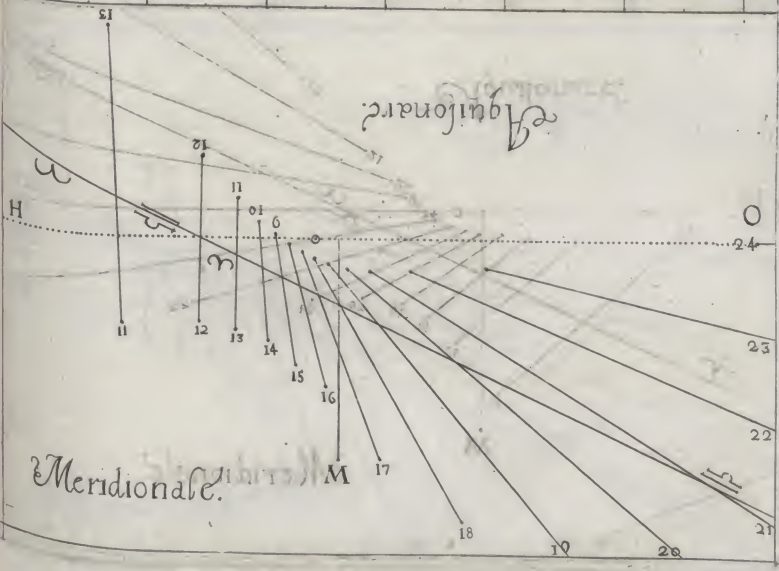


Tab. LIII.		Declinatio ad Occas. Grd. 26. Lat. 45.												H. Merid.	
		Tropic Capric.				Aequinoctialis.				Tropic Canceri.				H. Merid.	
		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		H. Merid.	
		G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	M.		
14										35	7	51	72	22	10
15	39	52	159	0	59	41	85	12	24	58	72	6	9		
16	65	6	46	41	49	33	34	10	13	23	38	27	8		
17	76	35	25	2	37	55	20	46	0	17	28	0	7		
18	67	21	15	51	23	49	14	38	345	23	24	5	6		
19	57	23	10	34	5	36	11	20	330	0	23	47	5		
20	43	24	6	59	343	32	9	57	315	5	26	57	4		
21	20	1	4	31	320	14	10	17	301	32	35	46	3		
22	337	33	3	26	299	34	12	20	289	39	61	56	2		
23	294	14	4	25	283	6	16	31	279	10	366	14	1		
24	270	0	6	86	270	0	24	36						24	
25	255	48	10	21	259	5	44	44						23	
26	244	39	15	33	249	16	193	27						22	
27	236	33	24	24										21	
28	227	59	44	37										20	
29	219	11	160	14										19	

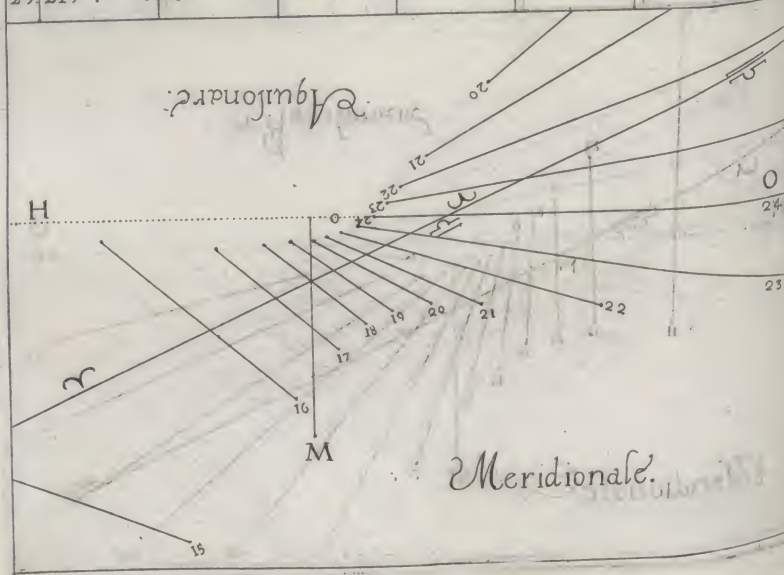


Tab. LV.		H. Merid.	
		Arc.	
		G.	
24	270		
23	278		
22	237		
21	296		
20	307		
19	323		
18	357		
17	40		
16	77		
15	97		
14	109		
13	119		
12	127		
11	135		
10	144		

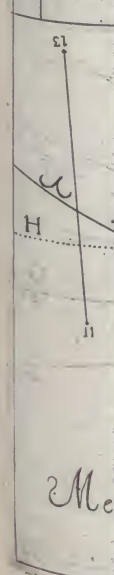
Tab. V.	Declinatio ad Ort. Gra. 27. Lat. 45.												
II. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			II. Aquil.			
	Arcus.		Umbra.	Arcus.		Umbra.	Arcus.		Umbra.				
	G.	M	P	M	G	M	P	M	G		M	P	M
4	270	.	0	95	.	9							24
3	278	.	34	36	.	30							1
2	237	.	1	21	.	7							2
1	296	.	5	13	.	41	300	.	16	95	.	53	3
0	307	.	11	9	.	6	310	.	15	35	.	45	4
0	323	.	23	5	.	56	321	.	39	21	.	18	5
8	357	.	54	3	.	51	335	.	35	14	.	47	6
7	40	.	58	3	.	28	353	.	22	11	.	22	7
6	77	.	44	5	.	5	15	.	17	9	.	52	8
5	97	.	6	7	.	55	38	.	51	10	.	3	9
4	109	.	18	11	.	55	59	.	56	11	.	37	10
3	119	.	0	18	.	8	76	.	44	15	.	36	11
2	127	.	28	29	.	42	90	.	0	23	.	33	12
1	135	.	56	62	.	26	100	.	58	41	.	51	13
0	144	.	13	1039	.	30	110	.	43	152	.	29	14



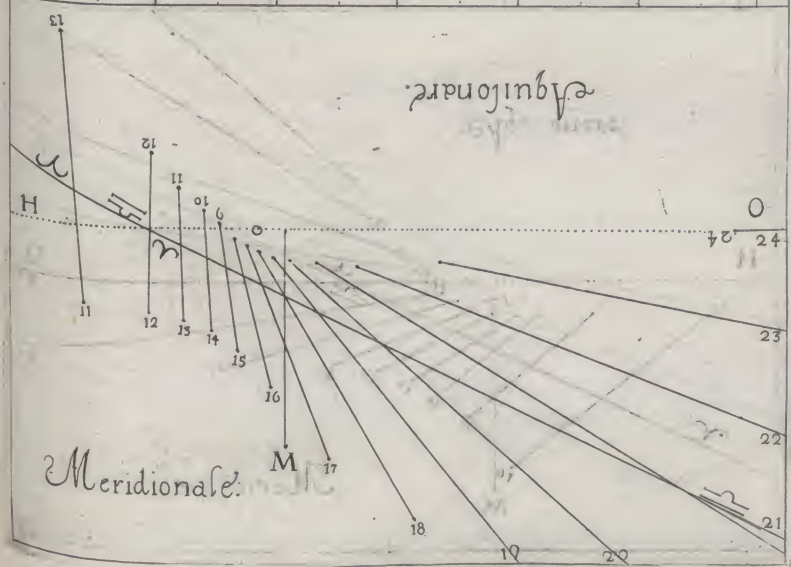
Tab. LXI.		Declinatio ad Occas. Gra. 27. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canceri.				H. Aquilo
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.			
15	93	56	285	19	59	44	95	53	25	6	75	39	9
16	85	7	50	35	49	45	35	44	13	40	39	1	8
17	76	42	26	12	38	21	21	18	0	32	28	0	7
18	68	3	16	25	24	25	14	47	345	52	23	49	6
19	58	4	10	53	6	38	11	22	330	26	23	17	5
20	44	42	7	11	344	43	9	52	315	24	26	6	4
21	22	23	4	36	321	9	10	3	301	42	34	10	3
22	340	55	3	21	300	4	11	57	289	42	57	14	2
23	295	26	4	12	283	16	13	55	279	16	274	33	1
24	270	0	6	33	270	0	23	32					24
25	255	24	10	0	259	2	41	51					23
26	245	30	15	2	249	17	152	29					22
27	236	9	23	34									21
28	227	46	42	49									20
29	219	6	141	59									19
											Alt. Pol.		
											P. M.		
											14	47	

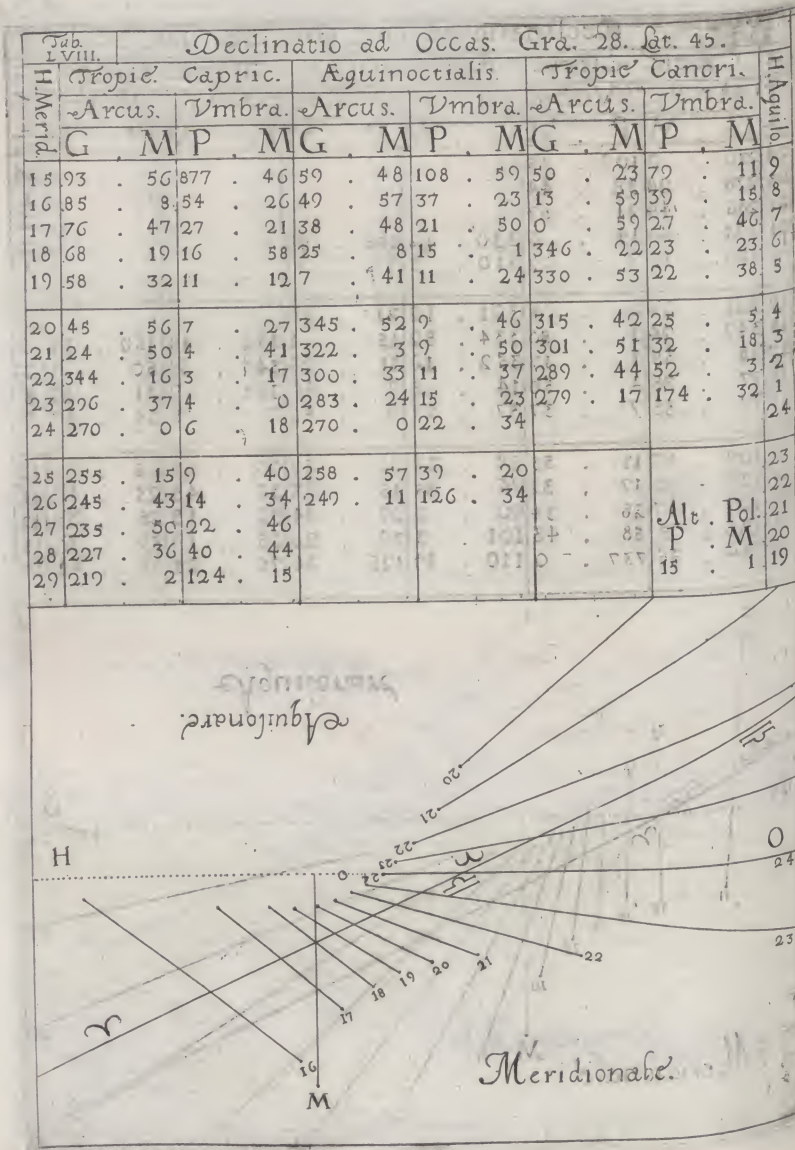


Tab. LVII.		Trop. Arc	
H. Merid.		G	
24	270	.	.
23	278	.	.
22	286	.	.
21	295	.	.
20	306	.	.
19	321	.	.
18	349	.	.
17	38	.	.
16	77	.	.
15	97	.	.
14	109	.	.
13	119	.	.
12	127	.	.
11	136	.	.
10	144	.	.



Tab. VII.		Declinatio ad Ort. Gra. 28. Lat. 45.													
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo		
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	M P	M	G.	M P	M	G.	M P	M	G.	M P	M			
24	270	0	109	35										24	
23	278	28	38	44										1	
22	286	44	21	57										2	
21	295	50	14	6	330	12	108	59						3	
20	306	10	9	22	310	3	37	23						4	
19	321	24	6	4	321	12	21	50						5	
18	349	24	3	50	334	52	15	1	330	19	150	15	6		
17	38	35	3	17	352	19	11	24	340	55	50	3	7		
16	77	38	4	50	14	8	9	46	353	9	31	42	8		
15	97	35	7	37	37	57	9	50	7	8	24	47	9		
14	109	47	11	33	59	27	11	37	22	21	22	45	10		
13	119	20	17	32	76	35	15	23	37	48	23	45	11		
12	127	47	28	34	90	0	22	34	52	18	28	33	12		
11	136	5	58	43	101	3	39	20	65	19	39	30	13		
10	144	55	73	7	110	49	126	34	76	21	98	41	14		



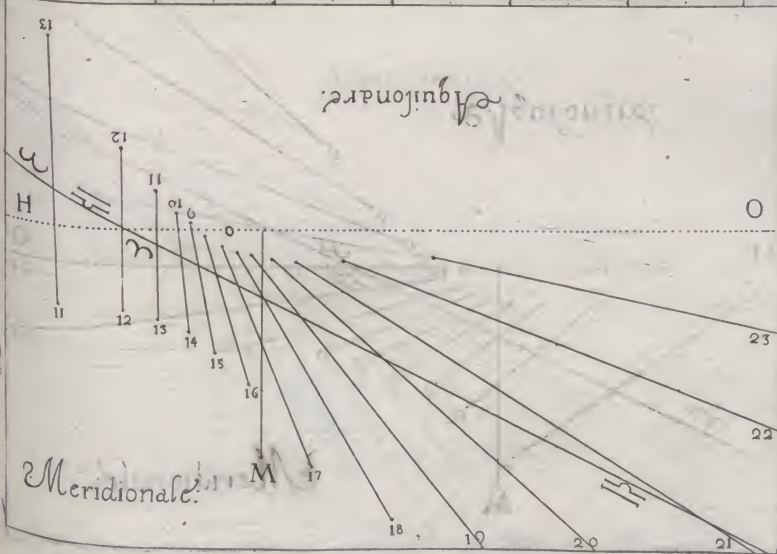


Tab. LVIII.

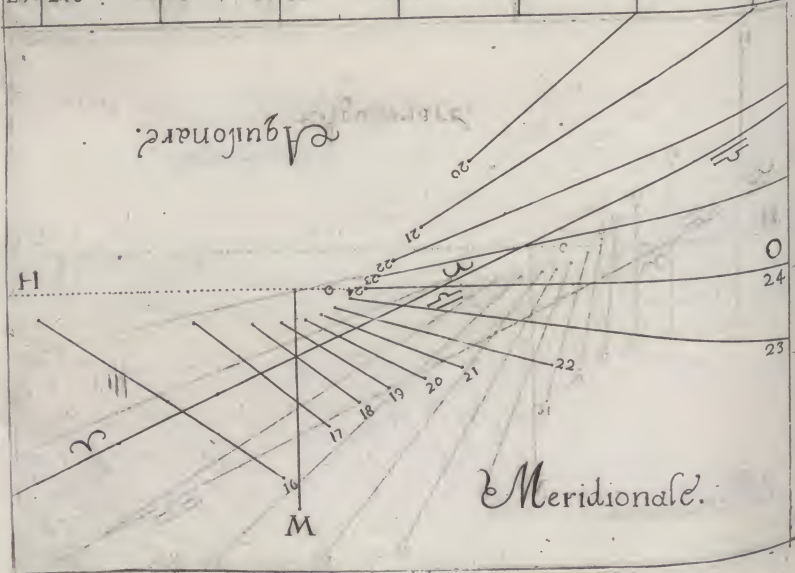
H. Merid.	Tropie. Capric.	Arcus.	Vmbra.	Tropie. Cancri.	H. Aquilo
24	270				
23	278				
22	286				
21	295				
20	305				
19	320				
18	346				
17	35				
16	76				
15	97				
14	110				
13	119				
12	127				
11	136				
10	144				

Diagram illustrating the declination of the sun at various altitudes (H) and meridians (M). The diagram shows the intersection of lines representing different altitudes (10 to 24) and meridians (G, M P, M G, M P, M G, M P, M). The lines are labeled with numbers corresponding to the altitudes. The diagram is divided into two sections: 'Equinoctiale' (top) and 'Meridionale' (bottom). The 'Equinoctiale' section shows the sun's path during the equinoxes, while the 'Meridionale' section shows the sun's path during the solstices. The diagram is a geometric representation of the astronomical data presented in the table above.

Tab. LVIII.		Declinatio ad Ort. Gra. 29. Lat. 45.															
H. Meridi.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Meridi.				
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.						
	G.	M P	M	G	M P	M	G	M P	M	G	M P	M					
24	270 .	0	133 .	23													24
23	278 .	28	41 .	17													1
22	286 .	26	22 .	51													2
21	295 .	30	14 .	35	300 .	10	126 .	57									3
20	305 .	38	9 .	39	309 .	49	39 .	10									4
19	320 .	14	6 .	16	320 .	47	22 .	27									5
18	346 .	46	3 .	56	334 .	8	15 .	15	330 .	15	172 .	24	6				6
17	35 .	16	3 .	11	351 .	16	11 .	28	340 .	42	51 .	26	7				7
16	76 .	37	4 .	37	12 .	54	9 .	41	352 .	48	31 .	58	8				8
15	97 .	30	7 .	20	36 .	55	9 .	37	6 .	40	24 .	50	9				9
14	110 .	4	11 .	10	58 .	52	11 .	18	21 .	50	22 .	24	10				10
13	119 .	46	16 .	59	76 .	23	14 .	51	37 .	21	23 .	9	11				11
12	127 .	59	27 .	28	90 .	0	21 .	38	52 .	1	27 .	29	12				12
11	136 .	14	55 .	8	101 .	25	37 .	0	65 .	2	38 .	49	13				13
10	144 .	56	382 .	53	110 .	49	107 .	33	76 .	17	77 .	24	14				14



Tab. LX.		Declinatio ad Occas. Gra. 29. Lat. 45											
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.				
15	93	56	278	37	59	50	126	57	25	22	83	50	9
16	85	10	59	59	50	11	37	10	14	15	40	15	8
17	76	54	28	42	39	13	22	27	1	23	28	3	7
18	68	33	17	45	25	52	15	15	346	51	23	21	6
19	59	17	11	33	8	44	11	28	331	22	22	21	5
20	47	0	7	35	347	6	9	41	316	3	24	30	4
21	27	6	4	48	323	3	9	37	202	6	31	9	3
22	347	57	3	14	301	8	15	16	289	51	49	5	2
23	298	19	3	47	283	37	14	51	279	18	147	41	1
24	270	0	6	1	270	0	21	38					24
25	254	49	9	20	258	35	37	0					23
26	244	48	14	6	249	11	107	33					22
27	235	33	21	59									21
28	227	22	38	53									20
29	218	36	111	59									19

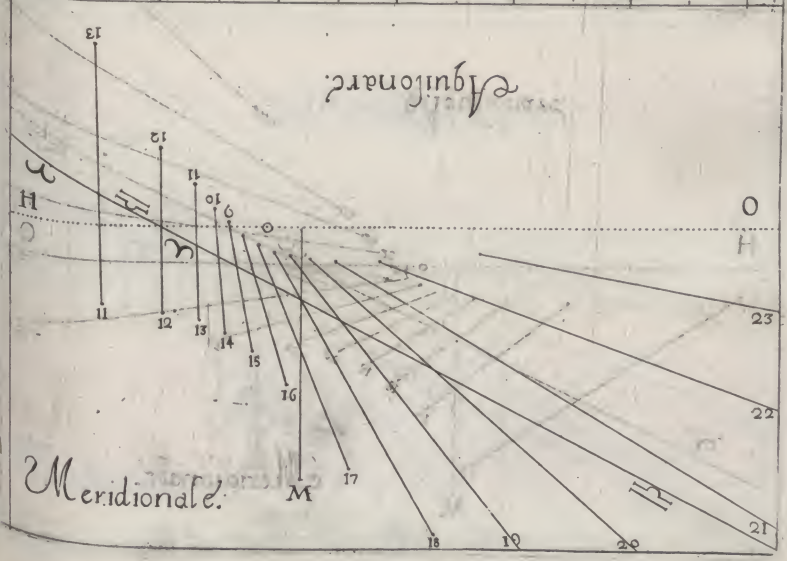


Tab. LXI.

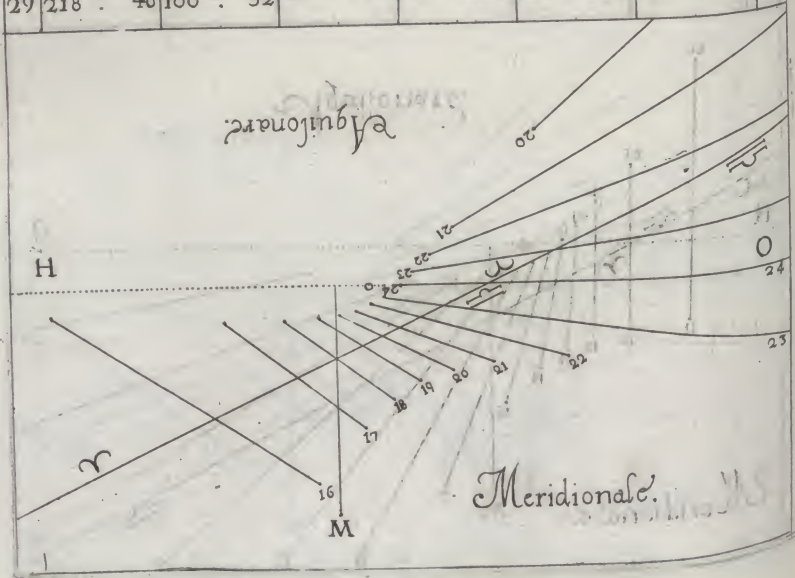
H. Merid.	Arc.		H. Aquil.
	G.		
	G.		
24	269		
23	278		
22	286		
21	295		
20	304		
19	318		
18	343		
17	32		
16	76		
15	97		
14	110		
13	122		
12	128		
11	136		
10	145		

Merid.

Tab. LXI. Declinatio ad Ort. Gra. 30. Lat. 45.													
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Canceri.				H. Aquilo
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
24	269	39	159	36									24
23	278	33	43	32									1
22	286	30	23	49									2
21	295	3	15	3	300	1	150	48					3
20	304	48	9	56	309	38	41	6					4
19	318	49	6	26	320	22	23	2					5
18	343	47	3	59	333	27	15	29	330	12	191	37	6
17	32	113	4	350	13	11	31	340	29	53	6	7	7
16	76	14	23	11	42	9	37	352	26	32	7	8	8
15	97	43	7	3	35	56	9	24	6	10	24	42	9
14	110	34	10	48	58	20	10	56	20	54	22	7	10
13	122	38	16	24	76	12	14	21	36	59	22	33	11
12	128	12	26	27	90	0	20	47	51	30	26	41	12
11	136	27	52	39	101	10	34	55	64	53	36	41	13
10	145	9	308	58	110	53	94	15	76	16	66	5	14

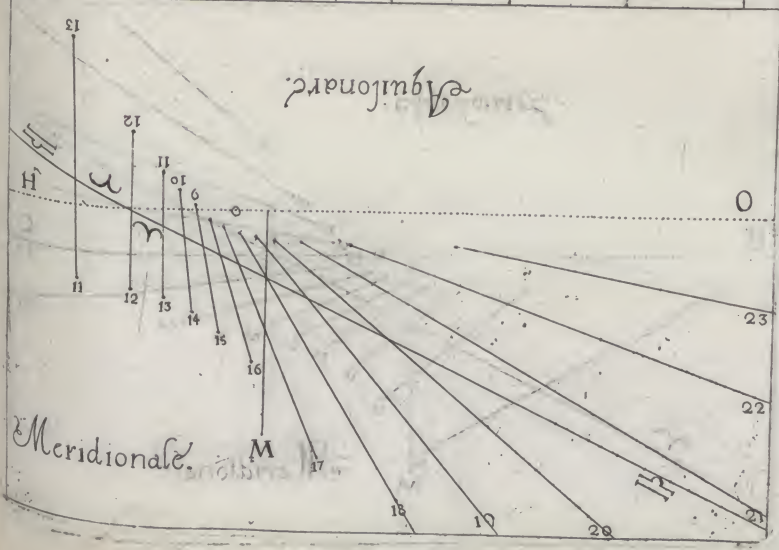


Tab. LXII.		Declinatio ad Occasu. Gra. 30. Lat. 45:												H. Aquilo
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.					
	Arcus.		Umbra.		Arcus.		Umbra.		Arcus.		Umbra.			
	G.	M P.	M	G.	M P.	M	G.	M P.	M					
15					59	59	150	48	23	31	88	10	9	
16	85	10	65	25	50	22	41	6	14	34	40	54	8	
17	76	59	30	10	39	38	23	2	1	50	28	5	7	
18	68	41	18	11	26	33	15	29	347	22	23	7	6	
19	59	44	11	53	9	45	11	31	331	51	21	58	5	
20	47	40	7	50	348	18	9	37	316	30	23	45	4	
21	29	18	4	55	324	4	9	24	302	19	29	47	3	
22	351	37	3	12	301	40	10	56	289	57	42	42	2	
23	299	35	3	35	283	48	14	21	279	26	126	36	1	
24	270	0	5	46	270	0	20	47					24	
25	254	31	9	2	258	50	34	55					23	
26	244	5	13	40	249	7	94	15					22	
27	235	17	21	15									21	
28	227	12	37	7									20	
29	218	48	100	52									19	

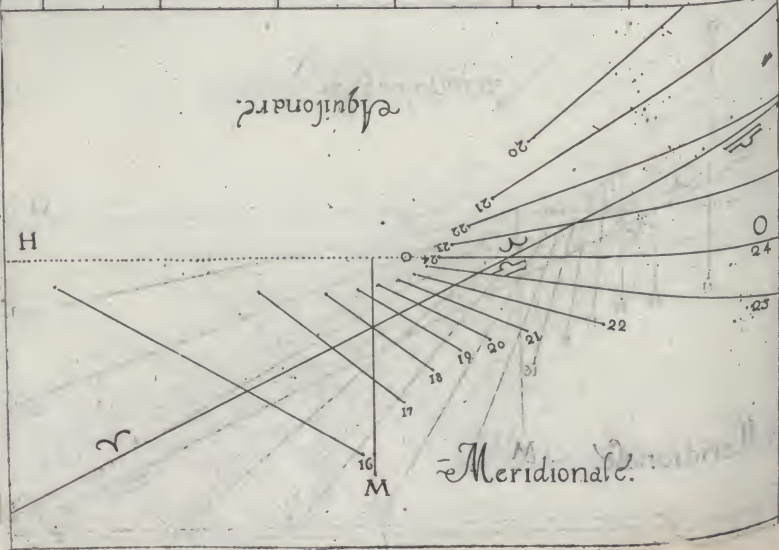


ri.	H. Aquil.
rd.	M.
10	9
54	8
5	7
7	6
58	5
45	4
47	3
42	2
36	1
24	
23	
22	
21	
20	
19	
18	
17	
16	
15	
14	
13	
12	
11	
10	

Declinatio ad Ort. Gra. 31. lat. 45.											
Tropie Capric.			Aequinoctialis.			Tropie Cancr.					
Arcus.			Arcus.			Arcus.					
Vmbra.			Vmbra.			Vmbra.					
G.	M.	P.	G.	M.	P.	G.	M.	P.	G.	M.	P.
24	270	0	226	27	001	24	317	24	6	37	319
23	278	23	47	18	802	18	340	58	4	3	332
22	286	9	24	49	887	17	28	41	2	57	349
21	294	41	15	33	300	16	75	21	4	9	10
20	304	9	10	13	309	15	98	3	6	46	34
19	317	24	6	37	319	14	110	54	10	27	57
18	340	58	4	3	332	13	120	10	15	56	75
17	28	41	2	57	349	12	128	33	25	32	90
16	75	21	4	9	10	11	136	33	49	25	101
15	98	3	6	46	34	10	144	59	21	53	110
14	110	54	10	27	57	9					
13	120	10	15	56	75	8					
12	128	33	25	32	90	7					
11	136	33	49	25	101	6					
10	144	59	21	53	110	5					

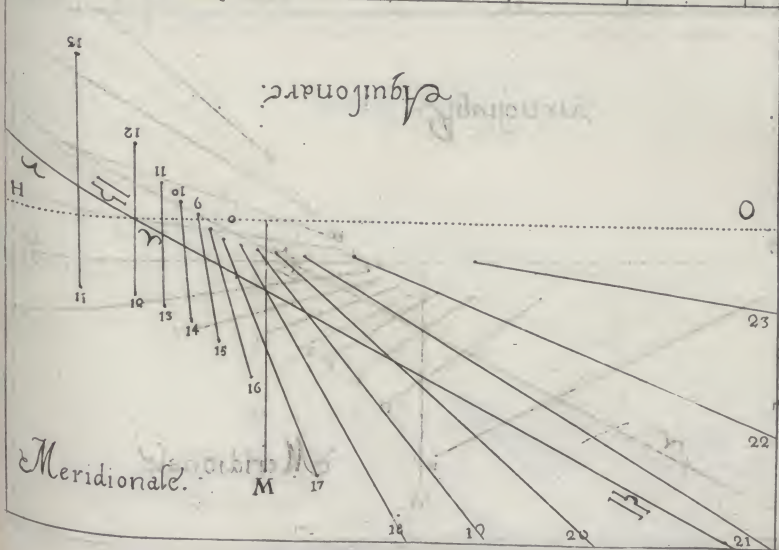


Tab. LXIII.		Declinatio ad Occas. Gra. 31. Lt. 45.									
H. Merid.	Tropic. Capric.			Aequinoctialis.				Tropic. Cancr.			H. Aquil.
	Arcus.		Umbra.	Arcus.		Umbra.		Arcus.		Umbra.	
	G.	M.	P.	G.	M.	P.	M.	G.	M.	P.	M.
15				59	13	188	59	25	37	93	47
16	85	11	73	6	50	32	43	22	14	49	41
17	77	5	31	46	40	1	23	43	2	15	28
18	69	0	18	52	27	14	15	45	34	7	54
19	60	30	12	16	11	50	11	36	33	20	21
20	49	3	8	3	34	9	33	31	6	49	23
21	31	25	5	2	32	5	8	13	30	2	31
22	35	20	3	10	30	2	16	37	29	0	2
23	30	1	3	25	28	4	1	52	27	9	20
24	270	0	5	31	270	0	19	56			
25	254	0	8	43	258	46	35	2			
26	243	47	13	14	249	6	82	0			
27	234	56	20	33							
28	226	56	35	38							
29	218	44	92	51							
											Alt. Pl.
											P. M.
											15 . 45 . 19

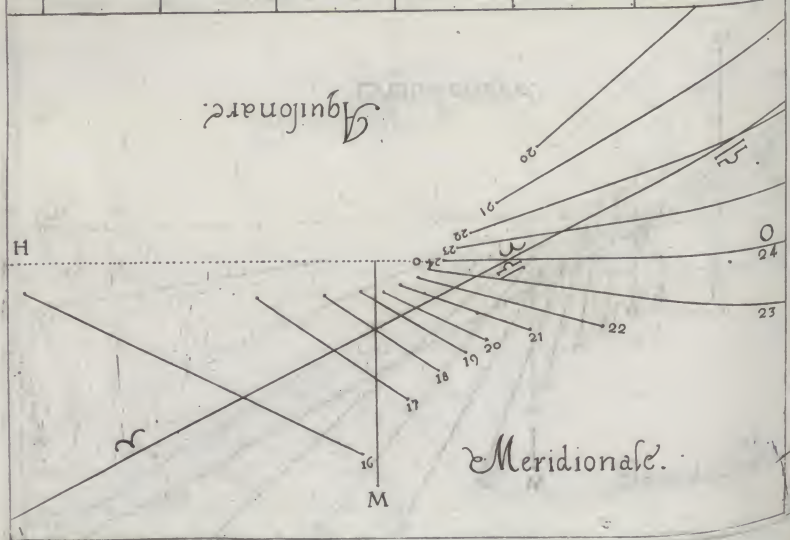


45.
ncr.
nbra.
M
47 2
33 8
8 7
54 6
29 5
5 4
36 3
55 2
47 1
24
23
22
21
20
19
lt. Pol.
M
45 19

Tab. LXV.		Declinatio ad Ort. Gra. 32. Lat. 45.																	
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Cancr.				H. Aquil.						
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.								
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M							
24	270	.	0	294	.	31								24					
23	278	.	21	50	.	46								1					
22	286	.	17	25	.	53								2					
21	294	.	24	16	.	4	300	.	2	242	.	28		3					
20	303	.	35	10	.	32	309	.	17	45	.	38		4					
19	315	.	57	6	.	47	319	.	35	24	.	21		5					
18	338	.	12	4	.	8	332	.	6	16	.	1	330	.	5	267	.	42	6
17	25	.	8	2	.	51	348	.	13	11	.	4	1340	.	3	55	.	44	7
16	74	.	37	3	.	56	9	.	14	9	.	30	351	.	4	132	.	39	8
15	98	.	19	6	.	30	33	.	48	9	.	3	5	.	11	24	.	28	9
14	111	.	17	10	.	7	57	.	7	10	.	18	20	.	19	21	.	25	10
13	120	.	55	15	.	27	75	.	46	13	.	24	36	.	5	21	.	27	11
12	128	.	51	24	.	40	90	.	0	19	.	12	51	.	10	24	.	38	12
11	136	.	43	46	.	51	101	.	18	31	.	26	64	.	30	33	.	5	13
10	143	.	2	207	.	5	110	.	59	74	.	30	76	.	9	57	.	26	14
9													86	.	4	312	.	26	15

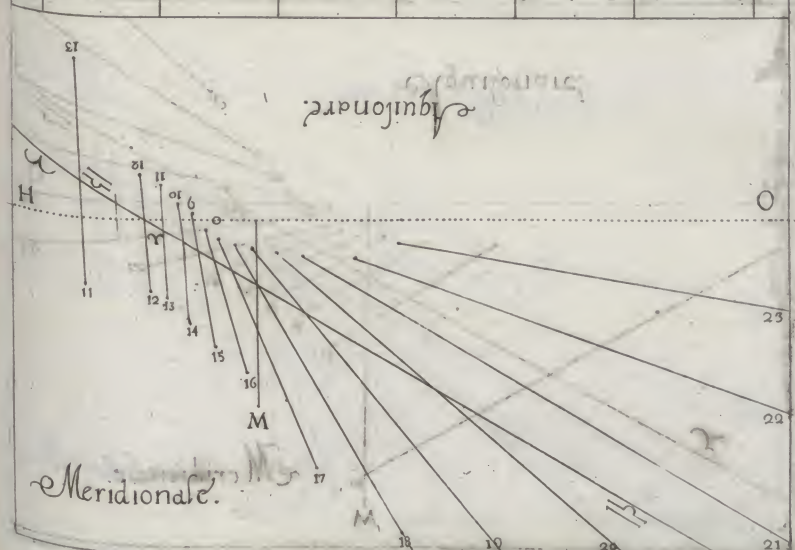


Tab. LXVI. Declinatio ad Occas. Gra. 32. Lat. 45.																				
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.							
	Arcus.		Vmbra.	Arcus.	Vmbra.	Arcus.		Vmbra.												
	G.	M P				G.	M P		G.	M P										
15	.	.	.	59	.	58	242	.	28	25	.	45	99	.	10	9				
16	85	.	12	80	.	37	50	.	43	45	.	38	15	.	7	42	.	13	8	
17	77	.	9	33	.	14	40	.	25	24	.	21	2	.	41	28	.	8	7	
18	69	.	13	19	.	33	27	.	54	16	.	1	248	.	23	22	.	42	6	
19	60	.	0	12	.	38	11	.	47	11	.	41	332	.	49	21	.	5	5	
20	49	.	6	8	.	16	330	.	46	9	.	30	317	.	12	22	.	25	4	
21	33	.	28	5	.	10	326	.	12	9	.	3	302	.	45	27	.	25	3	
22	259	.	5	3	.	9	302	.	53	10	.	18	290	.	8	40	.	10	2	
23	303	.	18	3	.	12	284	.	14	13	.	24	279	.	21	87	.	47	1	
24	270	.	0	5	.	15	270	.	0	19	.	12	.	.	.	.	.	.	24	.
25	253	.	47	8	.	24	258	.	42	31	.	20	.	.	.	.	.	.	23	.
26	243	.	19	12	.	49	249	.	1	74	.	30	.	.	.	.	.	.	22	.
27	234	.	38	19	.	53	.	.	.	.	.	.	.	.	.	.	.	.	21	.
28	226	.	43	34	.	10	.	.	.	.	.	.	.	.	.	.	.	.	20	.
29	218	.	38	91	.	9	.	.	.	.	.	.	.	.	.	.	.	.	19	.
															Alt.		Pol.			
															P		M.			
															16		1			

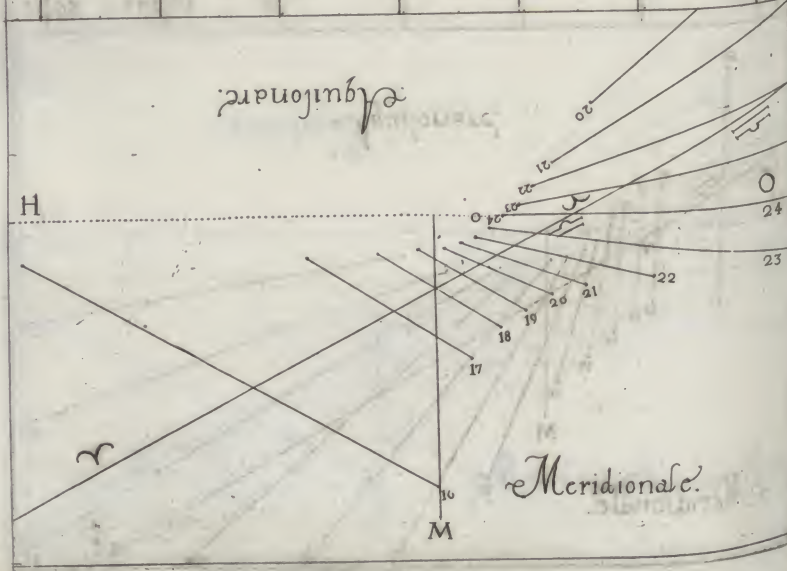


5.	
cri.	11
abra.	Agulo
M	
10	9
13	8
8	7
42	6
5	5
25	4
25	3
10	2
47	1
24	
23	
22	
21	
20	
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9	

Tab. LXVII.		Declinatio ad Ort. Gra. 33. Lat. 45.											
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Abn.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M P.	M G.	M P.	M G.	M P.	M						
24	270	0	589	2								24	
23	278	19	25	17								1	
22	286	8	27	6								2	
21	294	1	16	37	300	11	355	34				3	
20	302	51	10	50	309	8	48	22				4	
19	314	54	6	59	319	14	25	6				5	
18	335	38	4	12	331	26	16	18	330	3	340	55	6
17	21	8	2	46	347	14	11	47	339	52	57	29	7
16	73	40	3	43	7	58	9	27	351	19	32	53	8
15	98	32	6	13	32	39	8	52	4	42	24	23	9
14	111	40	9	48	56	28	10	0	19	47	21	7	10
13	121	3	14	58	75	33	12	57	35	36	20	57	11
12	129	9	23	50	90	0	18	28	50	50	23	51	12
11	136	55	44	46	101	22	29	51	64	26	31	35	13
10	145	5	180	39	111	2	67	15	76	7	53	11	14
9									86	17	237	56	15

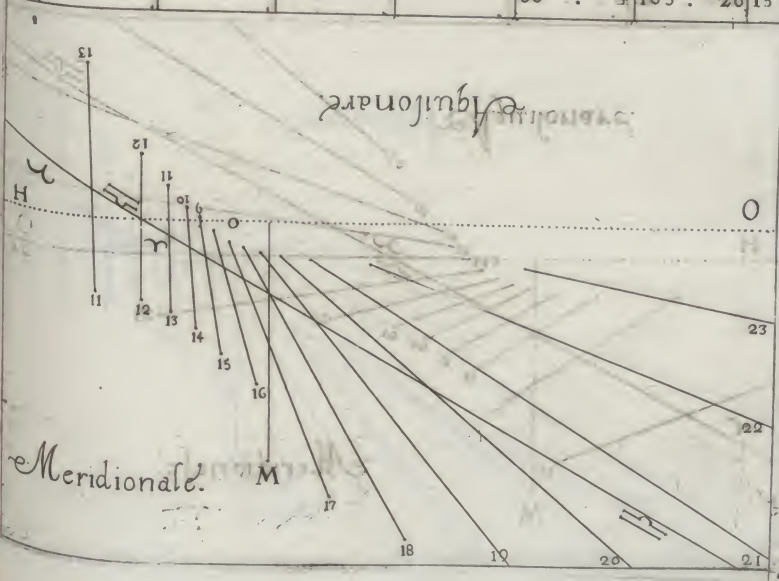


Tab. LXVIII.		Declinatio ad Occas. Gra. 33. Lat. 45.												H. Aquil.	
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.		
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	MP	P.	MG.	G.	MP	P.	MG.	G.	MP	P.	M.			
15					59	49	355	34	25	50	106	20	9		
16	85	14	93	28	50	52	48	22	15	23	42	58	8		
17	77	14	35	20	40	46	25	6	3	6	28	15	7		
18	69	27	20	18	28	34	16	18	348	54	22	21	6		
19	61	31	13	2	12	46	11	47	333	20	20	42	5		
20	50	51	8	30	352	2	9	27	317	36	21	48	4		
21	35	14	5	18	327	21	8	52	303	8	26	23	3		
22	2	53	3	10	303	32	10	8	290	14	38	2	2		
23	305	37	3	1	284	27	12	57	279	22	78	45	1		
24	270	0	5	1	270	0	18	28					24		
25	253	14	8	6	258	38	29	51					23		
26	242	50	12	26	248	58	67	15					22		
27	234	15	19	16									21		
28	226	28	32	52									20		
29	218	33	79	8									19		
												Alt. Pol.			
												P. M.			
												16	18		

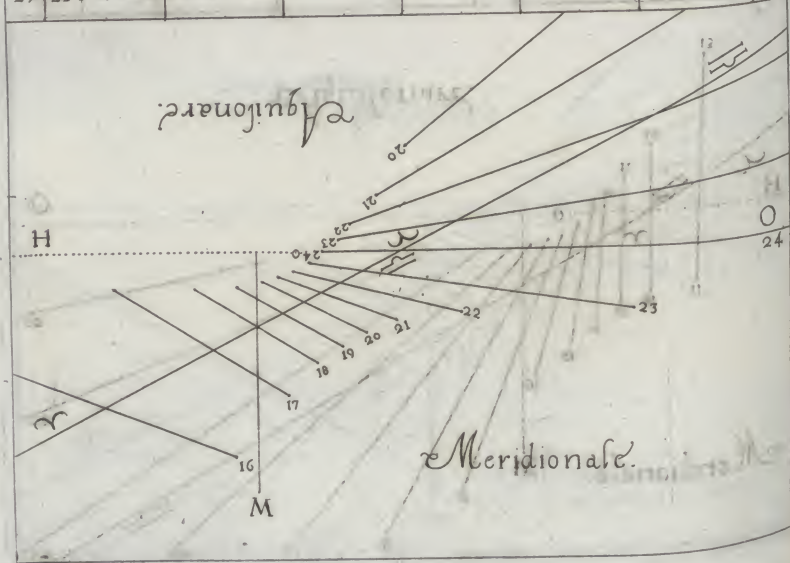


45.	H. Aquil.
cri.	bra.
M	
20 9	
58 8	
15 7	
21 6	
42 5	
48 4	
23 3	
2 2	
45 1	
24	
23	
22	
Pol. 21	
M. 20	
18 19	

Tab. LXVIII		Declinatio ad Ort. Gra. 34. Lat. 45.																	
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.						
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.								
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M							
24	270	.	0	468	.	47								24					
23	278	.	17	60	.	9								1					
22	286	.	1	28	.	22								2					
21	293	.	38	17	.	12	300	.	4	63	.	48		3					
20	302	.	47	11	.	10	308	.	58	51	.	14		4					
19	313	.	43	7	.	12	318	.	52	25	.	47		5					
18	322	.	59	4	.	19	330	.	47	16	.	35	330	.	2	438	.	45	6
17	17	.	5	2	.	42	346	.	14	11	.	52	339	.	40	59	.	15	7
16	72	.	41	3	.	30	6	.	43	9	.	24	350	.	87	33	.	9	8
15	98	.	50	5	.	59	31	.	31	8	.	41	4	.	12	24	.	18	9
14	112	.	17	9	.	28	55	.	48	9	.	42	19	.	15	20	.	50	10
13	121	.	46	14	.	31	75	.	19	12	.	31	35	.	9	20	.	29	11
12	129	.	30	23	.	3	90	.	0	17	.	47	50	.	32	23	.	3	12
11	137	.	36	44	.	13	101	.	28	28	.	27	64	.	17	30	.	5	13
10	145	.	9	153	.	38	111	.	7	61	.	40	76	.	4	48	.	55	14
9													86	.	4	163	.	26	15

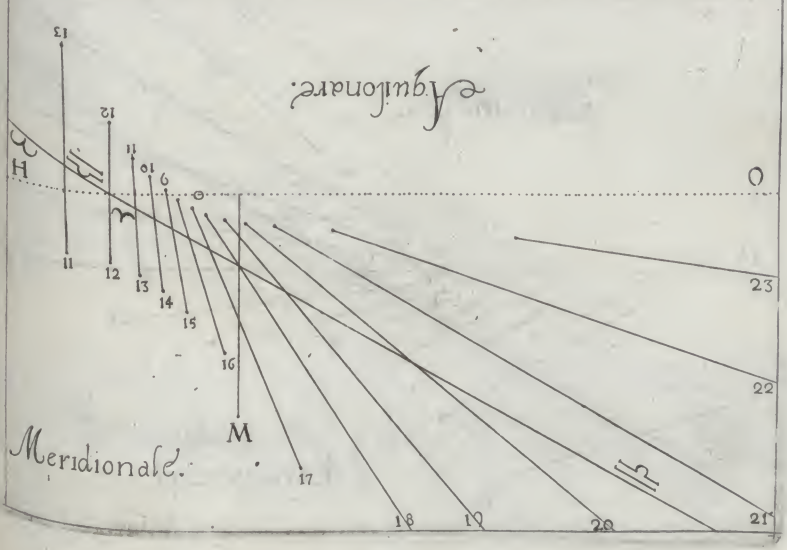


Tab. LXX.		Declinatio ad Occas. Gra. 34. Lat. 45.														H Aquil			
H Merid	Tropic. Capric.				Aequinoctialis.				Tropic. Cancri.										
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.										
	G.	M P.	M	G.	M P.	M	G.	M P.	M										
15	.			59	.	56	63	.	48	25	.	57	113	.	52	9			
16	85	.	14	106	.	26	51	.	2	51	.	14	15	.	39	43	8		
17	77	.	19	37	.	20	41	.	8	25	.	49	3	.	27	28	7		
18	69	.	45	21	.	5	29	.	13	16	.	35	349	.	26	22	6		
19	61	.	27	13	.	26	13	.	46	11	.	52	333	.	31	20	5		
20	51	.	52	8	.	45	353	.	17	9	.	324	318	.	0	21	12	4	
21	37	.	25	.	28	328	.	29	8	.	41	303	.	14	25	.	22	3	
22	6	.	39	3	.	11	304	.	12	9	.	42	290	.	21	35	.	50	2
23	308	.	32	.	51	284	.	41	12	.	31	279	.	23	69	.	43	1	
24	270	.	0	4	.	46	270	.	0	17	.	47		.				24	
25	252	.	46	7	.	49	258	.	32	28	.	27		.				23	
26	242	.	20	12	.	3	248	.	53	61	.	40		.				22	
27	233	.	31	18	.	43		.			.			.				21	
28	226	.	18	31	.	34		.			.			.				20	
29	218	.	23	73	.	25		.			.			.				19	

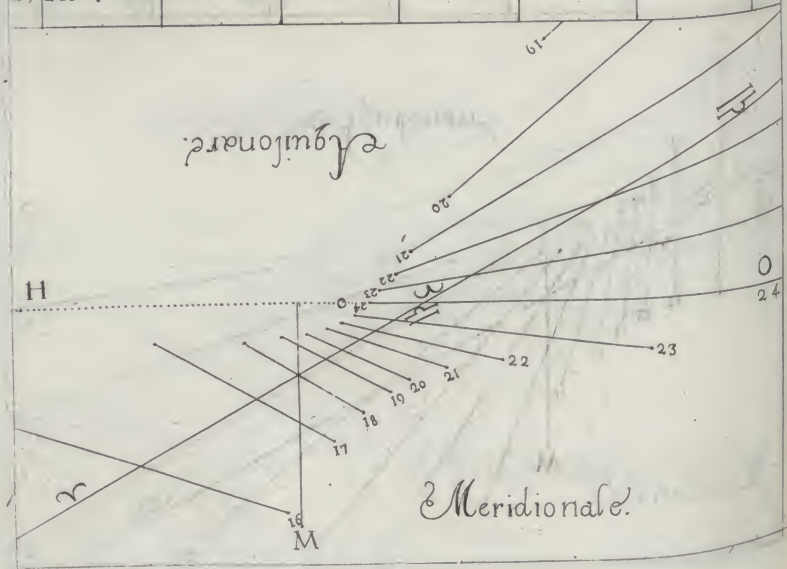


5.	ri.	H. Aquil.
ra.		
M		
52	9	
43	8	
19	7	
20	6	
20	5	
12	4	
22	3	
50	2	
43	1	
	24	
23		
22		
21		
20		
35	19	

Declinatio ad Ort. Gra. 35. Lat. 45.											
Tropic. Capric.		Aequinoctialis.				Tropic. Cancr.					
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M
23	278 .	15 66 .	23								1
22	285 .	36 29 .	46								2
21	293 .	26 17 .	48	300 .	15 374 .	34					3
20	302 .	52 11 .	31	308 .	49 54 .	34					4
19	312 .	36 7 .	25	318 .	42 26 .	38					5
18	330 .	40 4 .	27	330 .	10 16 .	53	330 .	1 634 .	49	6	
17	12 .	36 2 .	38	345 .	18 11 .	58	339 .	30 61 .	11	7	
16	71 .	38 3 .	17	5 .	27 9 .	22	350 .	37 33 .	28	8	
15	99 .	9 5 .	44	30 .	19 8 .	32	3 .	43 24 .	14	9	
14	112 .	38 9 .	10	55 .	5 9 .	26	18 .	42 20 .	34	10	
13	121 .	52 14 .	6	75 .	3 12 .	9	34 .	40 20 .	1	11	
12	129 .	49 22 .	19	90 .	0 17 .	8	50 .	12 22 .	20	12	
11	137 .	20 40 .	49	101 .	32 27 .	10	64 .	6 28 .	50	13	
10	145 .	14 136 .	16	111 .	11 56 .	37	76 .	0 45 .	52	14	
9							86 .	3 131 .	29	15	

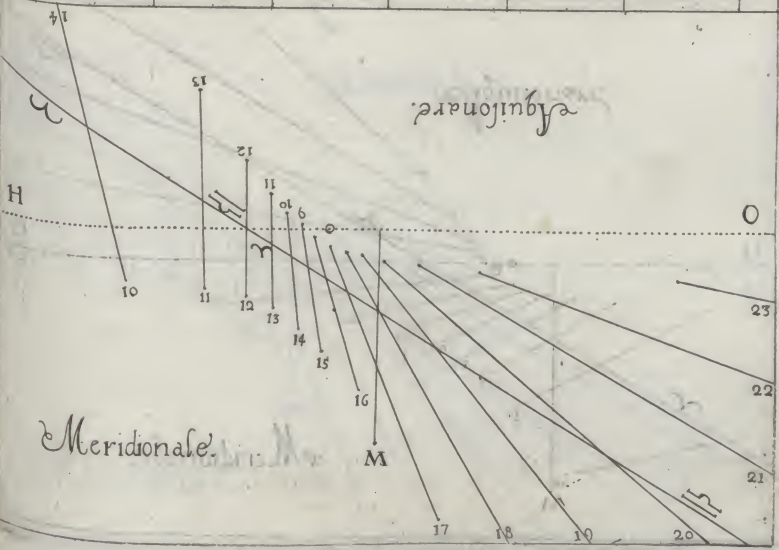


Tab. LXXII.		Declinatio ad Occas. Gra. 35. Lat. 45.										H. Merid.	
H. Merid.	Tropic. Caprio.		Aequinoctialis.		Tropic. Canceri.								
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.	M G.		M P.
15				59	45	3174	34	26	3	122	45	9	
16	85	14	119	32	51	11	54	34	15	54	44	8	
17	78	23	39	47	41	18	26	38	3	56	28	7	
18	69	52	21	54	29	50	16	53	349	58	22	6	
19	62	9	13	52	14	45	11	58	334	25	19	5	
20	52	33	9	1	354	33	9	22	318	27	20	4	
21	38	45	5	37	329	41	8	32	303	32	24	3	
22	10	26	3	13	304	55	9	26	290	29	34	2	
23	310	49	2	40	284	57	12	9	279	25	63	1	
24	270	0	4	32	270	0	17	8	270	0	8275	24	
25	252	22	7	31	258	28	27	10				23	
26	241	46	11	42	248	49	56	37				22	
27	233	31	18	7								21	
28	225	58	30	24								20	
29	218	18	68	58								19	
											Alt. Pol.		
											P. M.		
											16	53	



45.	
cri.	H. Aquil.
ibra.	
M	
45	9
35	8
25	7
15	6
5	5
30	4
28	3
5	2
42	1
47	24
23	
22	
21	
20	
19	
Pol	
M	
53	19

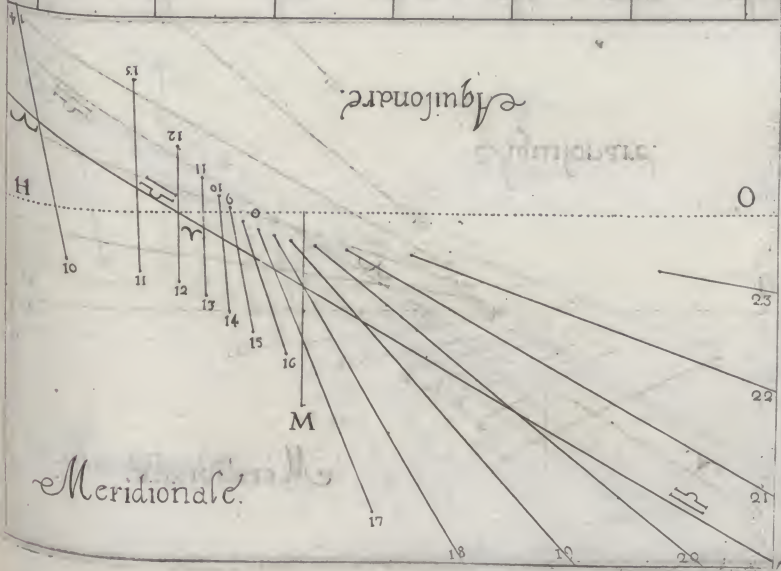
Tab. LXXXIII.		Declinatio ad Ort. Gra. 36. Lat. 45.												
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M P	M	G	M P	M	G	M P	M	G	M P	M		
23	278 .	51	72 .	54									1	
22	285 .	49	31 .	14									2	
21	293 .	9	18 .	26									3	
20	301 .	24	11 .	51	308 .	42	58 .	22					4	
19	311 .	35	7 .	38	318 .	12	27 .	28					5	
18	328 .	29	4 .	34	329 .	34	17 .	13	329 .	59	12	13 .	12	6
17	8 .	13	2 .	36	344 .	18	12 .	5	339 .	18	63 .	19	7	7
16	70 .	18	3 .	4	4 .	10	9 .	20	350 .	15	33 .	48	8	8
15	99 .	20	5 .	29	29 .	5	8 .	23	3 .	13	24 .	10	9	9
14	113 .	7	8 .	52	54 .	20	9 .	9	17 .	9	20 .	19	10	10
13	122 .	16	13 .	40	74 .	47	11 .	43	34 .	9	19 .	35	11	11
12	130 .	10	21 .	36	90 .	0	16 .	31	49 .	51	22 .	37	12	12
11	137 .	34	39 .	3	101 .	38	25 .	57	63 .	55	27 .	33	13	13
10	145 .	17	122 .	23	111 .	15	52 .	28	75 .	56	42 .	41	14	14
9					120 .	4	1085 .	54	86 .	3	110 .	28	15	15



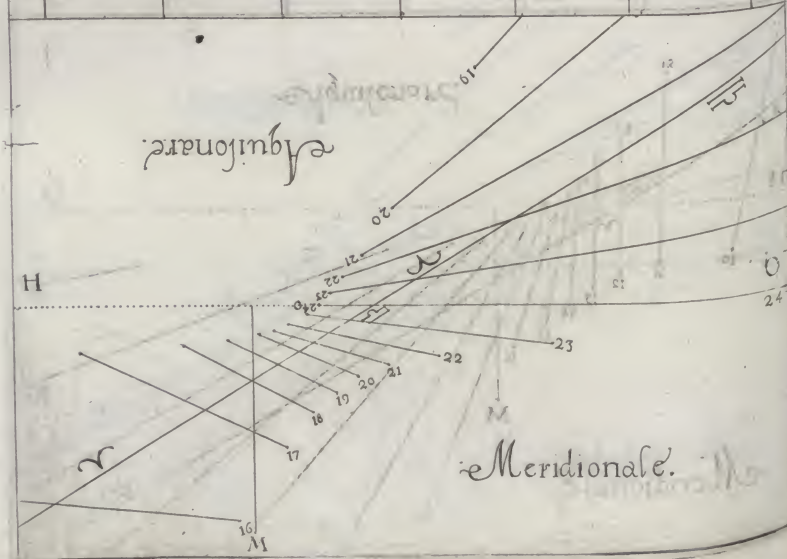
5.	cri.	Hagil
	ora.	M
35	9	
28	8	
31	7	
2	6	
40	5	
6	4	
35	3	
20	2	
49	1	
24	24	
23		
22		
Pb	21	
M	20	
13	19	

Tab. LXXV. Declinatio ad Ort. Gra. 37. Lat. 45.

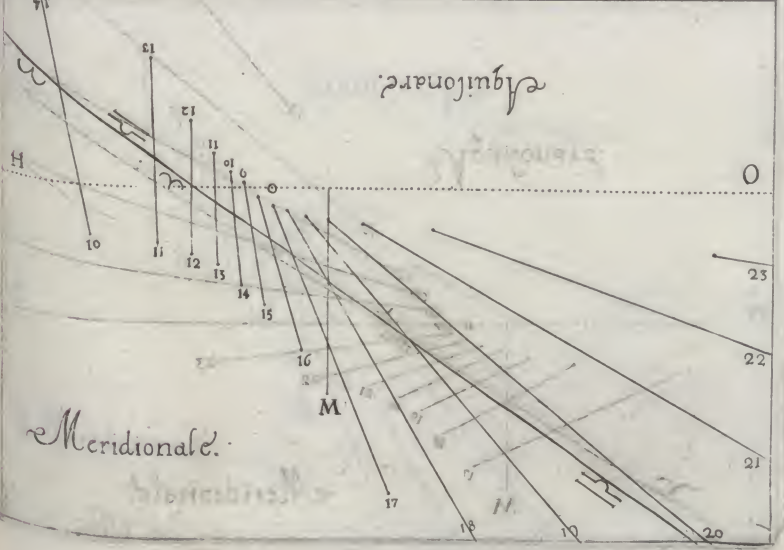
H Merid	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H Aquilo
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
	G	M P	M	G	M P	M	G	M P	M	
23	278	13 82	51							1
22	285	41 32	57							2
21	292	57 19	6							3
20	300	54 12	13 308	30 62	43					4
19	310	28 7	50 317	57 28	23					5
18	326	8 4	41 328	58 17	33 330	1 2429				6 6
17	3	28 2	34 343	21 12	12 339	2 65				27 7
16	69	1 21	51 2	52 9	19 349	55 29				10 8
15	99	55 5	13 27	48 8	13 2	45 24				6 9
14	113	48 8	36 53	42 8	53 17	34 20				3 10
13	122	56 13	16 74	31 11	19 33	30 19				9 11
12	130	30 20	57 90	0 15	57 49	28 20				58 12
11	137	48 37	30 101	42 24	49 63	43 26				26 13
10	145	23 111	42 111	23 48	44 75	51 40				12 14
9			120	17 453	21 86	3 96				52 15



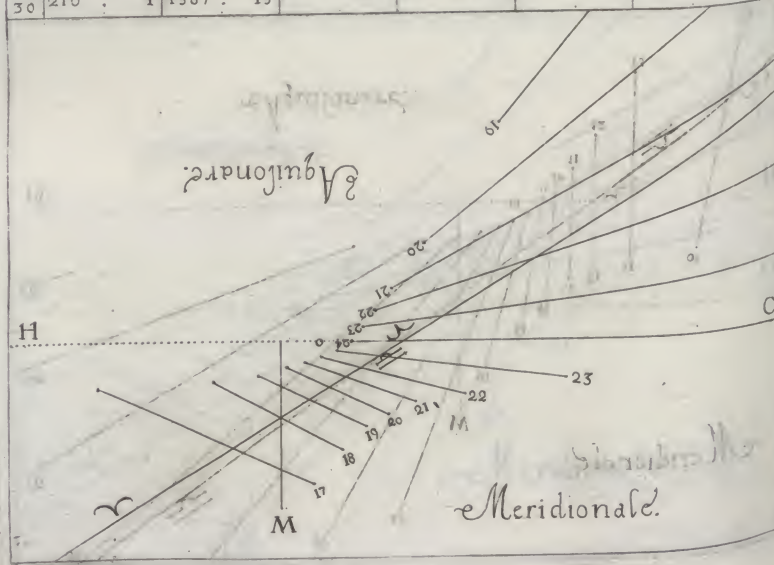
Tab. LXXVI.		Declinatio ad Occas. Ca. 37. Lat. 45.													
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.		
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M			
13															
16	85	14	216	25	51	24	62	43	16	11	137	13	9	8	
17	77	30	45	20	42	7	28	23	4	46	28	37	7	6	
18	70	13	23	44	31	2	17	33	351	2	21	52	6	5	
19	62	56	14	46	16	39	12	12	335	30	19	20	5	4	
20	54	7	9	33	357	8	9	19	319	15	19	36	4	3	
21	41	58	5	56	332	12	8	13	304	5	22	46	3	2	
22	17	33	3	19	306	18	8	53	290	44	30	40	2	1	
23	317	35	2	21	285	29	11	19	279	29	53	30	1	2	
24	270	0	4	3	270	0	15	57	270	0	297	24	2	2	
25	251	17	6	59	258	18	24	49							23
26	240	21	11	0	248	37	48	44							22
27	232	39	17	3	236	43	453	21	08		Alt	Ph	21		
28	225	23	28	20					24		P.	M	20		
29	217	59	61	4							17	33	19		



Tab. LXXVII.		Declinatio ad Ort. Gra. 38. Lat. 45.											
Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				Hagulo.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
23	278.	12	92.	49									1
22	285.	45	34.	26									2
21	292.	44	19.	47									3
20	300.	39		35	308.	24	67.	36					4
19	309.	18	8.	4	317.	34	29.	18					5
18	324.	3	4.	40	328.	23	17.	53					6
17	358.	55	2.	34	342.	25	12.	20	338.	57	67.	43	7
16	67.	32	2.	39	1.	6	9.	18	349.	33	34.	26	8
15	100.	14	4.	59	26.	31	8.	5	21.	13	24.	4	9
14	114.	34	8.	17	52.	44	8.	38	17.	0	19.	49	10
13	123.	23	12.	53	74.	4	10.	57	33.	7	18.	45	11
12	130.	53	20.	19	90.	0	15.	22	49.	6	20.	20	12
11	138.	3	36.	2	101.	49	23.	47	63.	31	25.	21	13
10	145.	28	101.	39	111.	27	45.	35	75.	47	37.	47	14
9					120.	1	290.	23	83.	3	83.	17	15

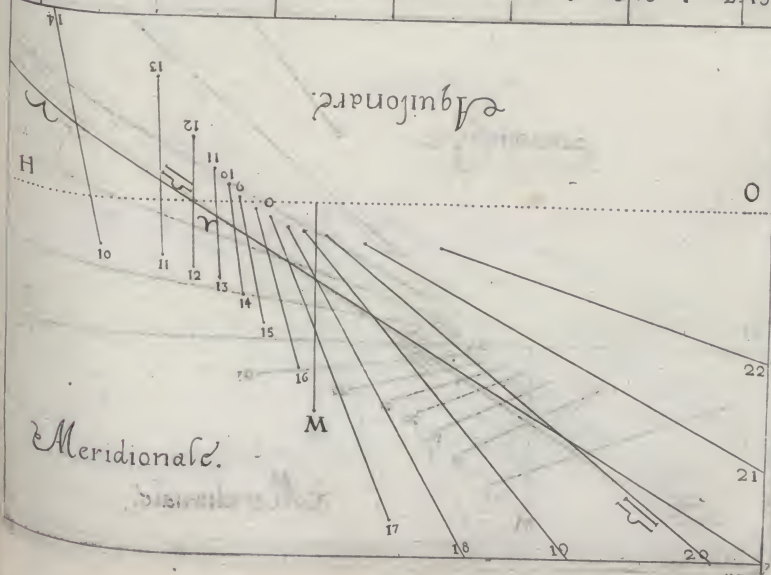


Tab. LXXVIII.		Declinatio ad Occas. Gra. 38. Lat. 45.												II. Merid.	
II. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				II. Merid.		
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.						
15										26	16	160	52	9	
16	85	14	280	31	51	36	67	36	16	40	47	18	6	8	
17	77	33	48	26	42	26	29	18	5	12	28	244	7	7	
18	70	24	24	43	31	37	17	53	35	1	21	43	6	6	
19	63	3	15	14	17	35	12	28	336	4	19	2	5	5	
20	55	11	9	29	358	54	9	18	319	48	19	6	4	4	
21	43	29	6	8	333	29	8	5	304	22	21	8	3	3	
22	21	5	3	23	307	16	8	38	290	53	29	20	2	2	
23	321	20	2	12	285	56	10	57	279	31	49	13	1	1	
24	270	0	3	50	270	0	15	22	270	0	187	16	24	24	
25	250	43	6	43	258	11	23	47						23	
26	240	27	10	40	248	33	45	35						22	
27	232	21	16	33	239	59	290	123						21	
28	225	6	27	21										20	
29	217	47	57	37										19	
30	210	1	1587	15										18	

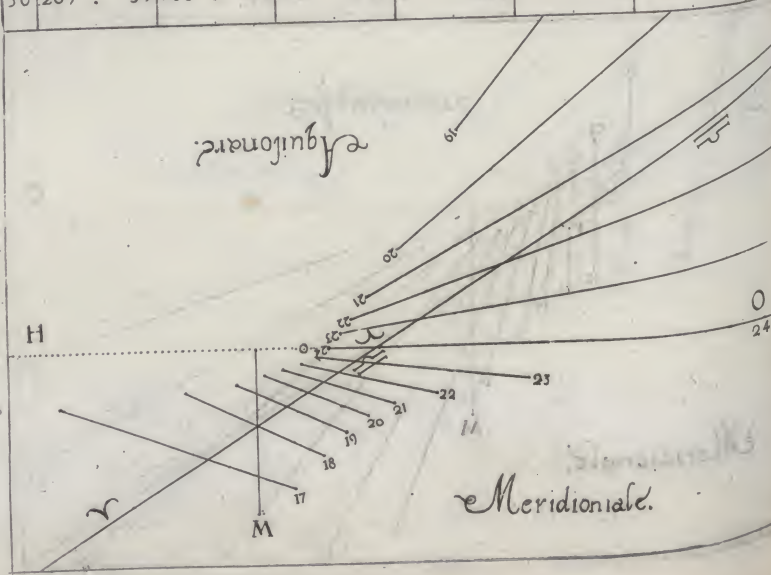


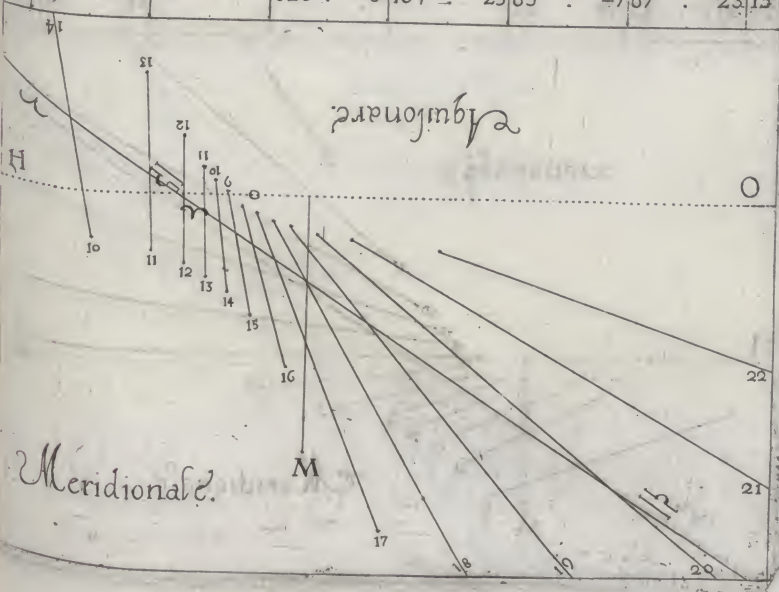
5.	H. Angli.
ICRI.	ora.
M	
52 9	
18 6	
44 7	
43 6	
2 5	
6 4	
32 3	
20 2	
13 1	
16 24	
23	
22	
Pol. 21	
M 20	
53 19	
18	

Declinatio ad Ort. Gra. 39. Lat. 45.											
Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.			
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G.	M P	M	G	M P	M	G	M P	M	G	M P	M
23	278	11 109	48								
22	285	29 36	46								1
21	292	29 20	32								2
20	299	58 12	38	308	22 73	25					3
19	308	35 8	18	317	16 30	19					4
											5
18	322	4 4	58	327	49 15	15					6
17	354	10 2	35	343	31 12	28	338	48 70	30	7	
16	65	29 2	27	0	18 9	18	349	13 34	48	8	
15	100	46 4	44	25	10 7	57	1	44 24	2	9	
14	114	52 8	0	51	52 8	23	16	25 19	36	10	
13	123	59 12	31	73	55 10	35	32	34 18	22	11	
12	131	17 19	43	90	0 14	50	48	41 19	44	12	
11	138	20 34	42	101	56 22	48	63	17 24	23	13	
10	145	34 94	2	111	34 42	44	75	42 35	44	14	
9				120	6 212	26	86	1 75	2	15	

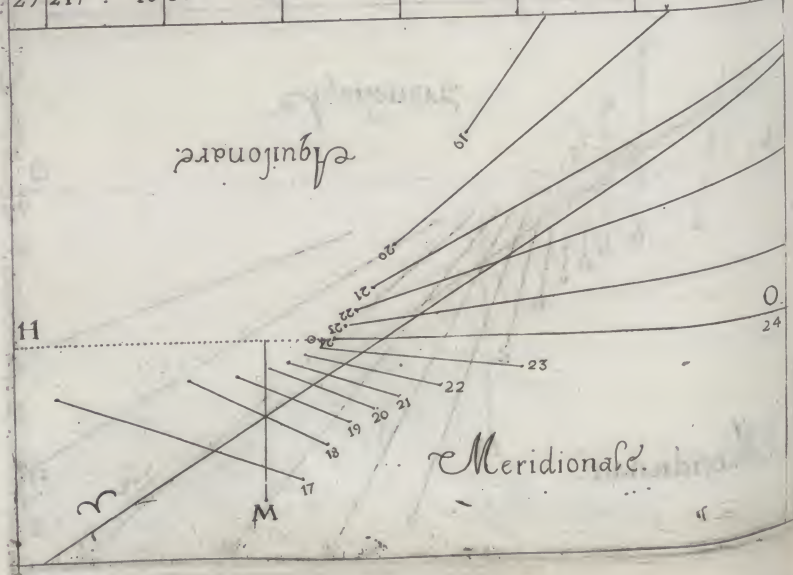


Tab. LXXX.		Declinatio ad Occas. Gra. 39. Lat. 45.										Magis	
H. Merid.	d	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.							
		Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.			
		G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.		
15								26	20	182	26	9	
16	85	16	876	23	51	38	73	25	17	1	48	23	8
17	77	37	52	31	42	44	30	19	5	36	28	53	7
18	70	32	25	48	32	11	18	15	352	8	21	37	6
19	63	26	15	44	18	29	12	28	336	40	18	44	5
20	55	26	10	7	359	42	9	18	320	18	18	38	4
21	44	54	6	18	354	50	7	57	304	42	21	16	3
22	24	8	3	28	308	8	8	23	291	2	28	5	2
23	326	46	2	5	286	5	10	35	279	35	45	58	1
24	270	0	2	35	270	0	14	10	270	0	135	21	24
25	250	3	6	28	258	4	22	49					23
26	239	19	10	30	248	26	42	44					22
27	231	48	16	7	239	54	212	26					21
28	224	45	26	30									20
29	217	39	54	50									19
30	209	59	955	69									18
													16



[illegible]

Tab. LXXXII.		Declinatio ad Occas. Gra. 40. Lat. 45.												H. Aquil.
H. Merid.	Tropic Capric.				Aequinoctialis.				Tropic Cancr.					
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G .	M P . M	G .	M P . M	G .	M P . M	G .	M P . M	G .	M P . M	G .	M P . M		
15										26	24	206	3	9
16					54	38	80	2	17	9	49	32	8	
17	76	52	54	7	43	1	31	26	6	7	28	50	7	
18	70	56	26	51	32	45	18	36	352	42	21	31	6	
19	63	33	16	14	19	24	12	37	337	16	18	28	5	
20	56	21	10	25	1	0	9	18	320	49	18	11	4	
21	46	3	6	30	336	14	7	50	305	2	20	32	3	
22	27	9	3	30	309	5	8	9	291	7	26	46	2	
23	330	51	1	58	286	24	10	14	279	38	42	43	1	
24	270	0	3	22	270	0	14	18	270	0	120	56	24	
25	249	31	6	13	257	57	21	54					23	
26	239	21	10	2	248	26	40	25					22	
27	231	0	15	40	239	55	167	25					21	
28	224	23	25	42									20	
29	217	10	54	22									19	

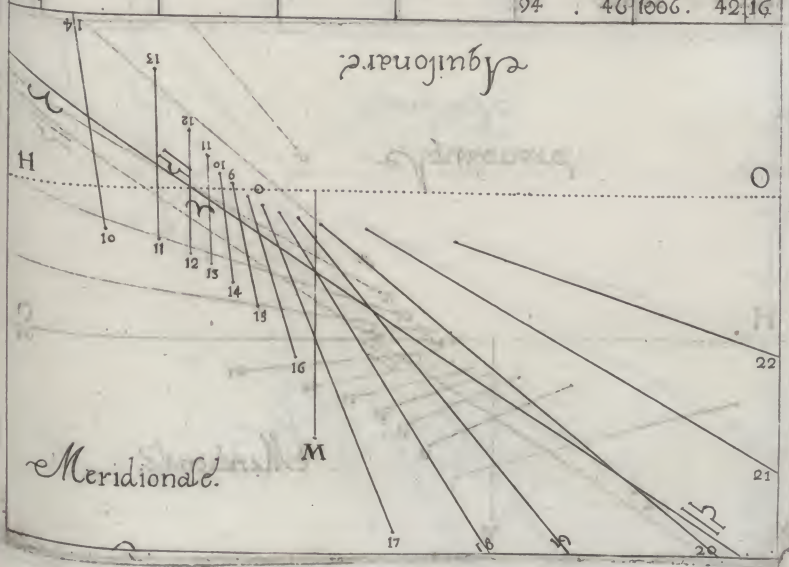


cri.	H. Aquil.
bra.	M
3	9
32	8
50	7
31	6
28	5
11	4
32	3
46	2
43	1
56	24
23	
22	
Pol.	21
M	20
36	19

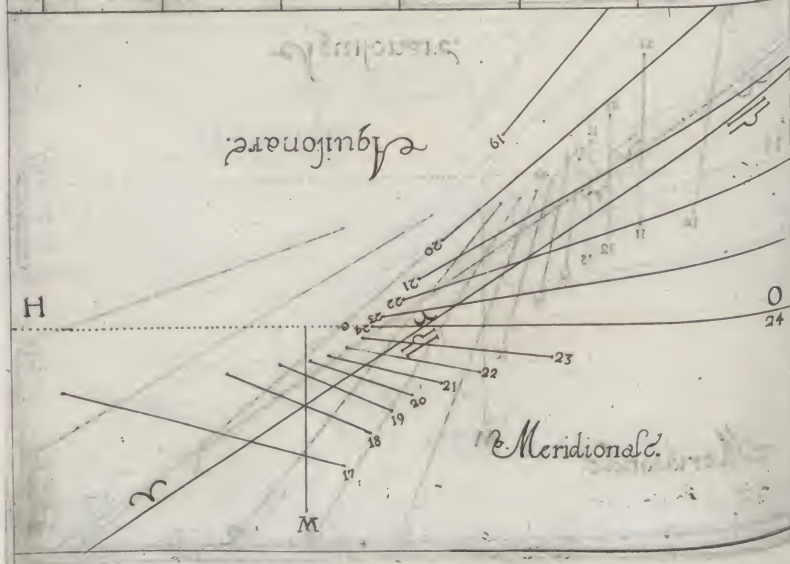
Tab.

Declinatio ad Ort. Gra. 41. Lat. 45.

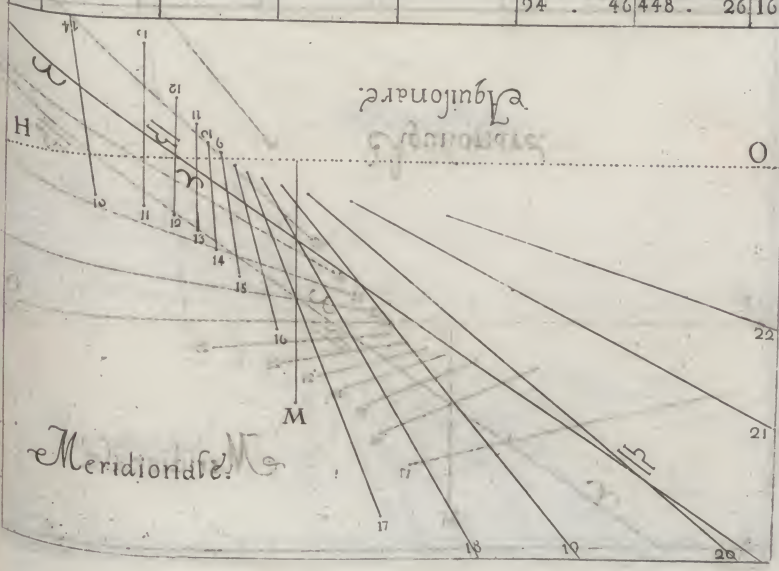
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo						
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.							
	G.	M	P.	M	G.	M		P.	M				
23	278	9	163	54									
22	285	19	41	26									
21	28	3	22	9									2
20	299	4	13	47	308	12	87	36					3
19	306	46	8	48	316	44	32	26					4
18	318	23	5	17	326	44	18	58					5
17	345	8	2	39	334	42	12	45	338	30	76	23	6
16	60	36	2	3	357	43	2	19	348	33	38	34	7
15	101	48	4	16	22	20	7	43	07	44	23	59	8
14	116	25	7	28	50	0	7	55	15	13	19	12	9
13	124	58	11	49	73	14	9	53	31	27	17	39	10
12	132	8	18	37	90	0	13	49	47	51	18	37	11
11	138	54	32	16	102	10	21	9	62	50	22	35	12
10	145	48	81	13	111	46	38	13	75	31	31	5	13
9	152	21			120	9	140	57	86	0	61	10	14
8								94	46	1006	42	16	15



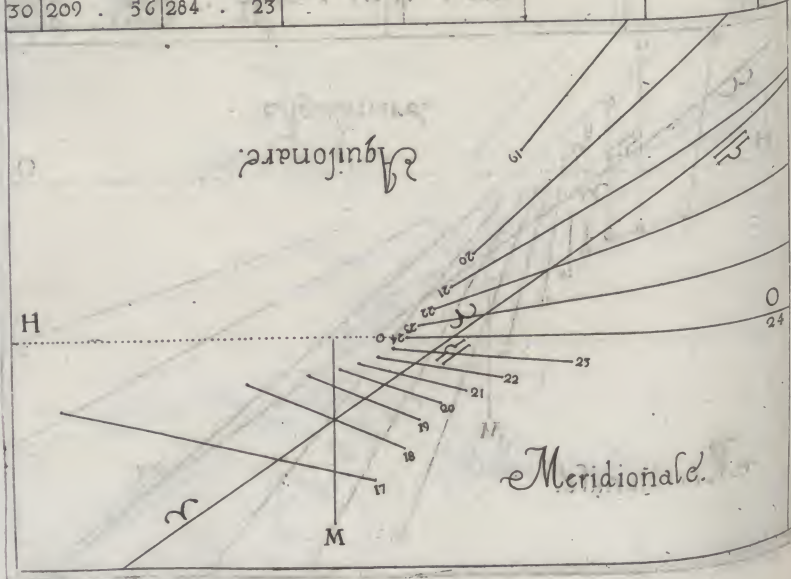
Tab. LXXXIII		Declinatio ad Occas. Gra. 41. lat. 45.										H. Merid.								
H. Merid.	Tropic. Capric.				Æquinoctialis.				Tropic. Cancr.											
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.									
	G.	M	P	M	G.	M	P	M	G.	M	P		M							
15	.	.	.	.	51	48	87	.	36	17	22	50	22	9						
16	.	.	.	.	43	16	32	.	26	6	26	29	12	7						
17	77	.	42	62	.	16	33	.	16	18	.	58	353	14	21	23	6			
18	78	.	49	28	.	12	33	.	16	18	.	58	353	14	21	23	6			
19	64	.	9	16	.	48	18	.	18	12	.	45	337	.	52	18	12	5		
20	56	.	44	10	.	44	2	.	17	9	.	19	321	.	26	17	.	46	4	
21	47	.	28	6	.	42	337	.	40	7	.	43	305	.	22	19	.	54	3	
22	30	.	8	3	.	41	310	.	0	7	.	55	291	.	22	25	.	56	2	
23	336	.	48	1	.	53	286	.	46	9	.	53	279	.	40	40	.	13	1	
24	270	.	0	3	.	8	270	.	0	13	.	49	270	.	0	104	.	22	24	
25	248	.	39	3	.	58	257	.	50	21	.	9							23	
26	238	.	21	9	.	45	248	.	14	38	.	53							22	
27	230	.	54	15	.	13	239	.	51	140	.	57							21	
28	224	.	4	24	.	52													20	
29	217	.	18	49	.	44													19	
30	209	.	56	382	.	1													18	
																	</			



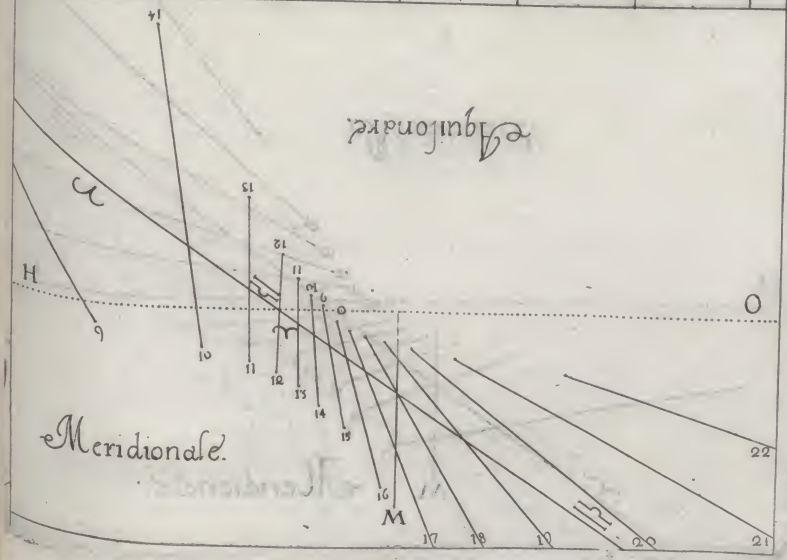
Tab. LXXXV. Declinatio ad Ort. Gra. 42. Lat. 45.														
H. Merid.	Tropic. Capric.				Equinoctialis.				Tropic. Cancr.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M		
23	278	8	201	1										1
22	285	16	44	4										2
21	291	53	23	3										3
20	298	26	14	12	308	4	98	41						4
19	306	14	9	5	316	28	33	49						5
18	316	59	5	28	326	13	19	26						6
17	340	57	2	43	338	50	12	55	338	15	80	37	7	7
16	57	40	1	53	355	27	9	19	348	13	35	56	8	8
15	102	25	4	3	20	54	7	36	0	13	23	59	9	9
14	116	48	7	13	49	1	7	41	14	37	19	0	10	10
13	125	23	11	29	72	55	9	33	30	52	17	19	11	11
12	132	33	18	6	90	0	13	20	47	26	18	6	12	12
11	139	6	31	8	102	18	20	13	62	35	21	44	13	13
10	145	55	73	46	111	52	35	58	75	25	30	28	14	14
9					120	11	117	28	85	58	55	45	15	15
8								94	46	448	26	16		16



Tab. LXXXVI		Declinatio ad Occas. Gra. 42. Lat. 45.										H. Aquilo	
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Merid.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M	P	M	G	M	P	M	G		M		P	M
15									26	29	276	45	9
16									17	35	51	50	8
17	77	46	68	24	34	32	33	49	6	50	29	21	7
18	70	59	29	30	33	47	19	26	353	47	21	17	6
19	64	34	17	28	21	10	12	55	338	28	17	56	5
20	57	19	11	3	3	33	9	19	321	51	17	21	4
21	48	34	6	54	339	6	7	36	305	43	19	17	3
22	32	43	3	49	310	59	7	41	291	31	24	38	2
23	342	34	1	48	287	5	9	33	279	43	37	43	1
24	270	0	2	55	270	0	13	20	270	0	89	19	24
25	248	6	5	44	257	42	20	13					23
26	238	24	9	27	248	8	35	58					22
27	229	55	14	49	239	49	117	28					21
28	223	47	24	5									20
29	217	8	47	25									19
30	209	56	284	23									18



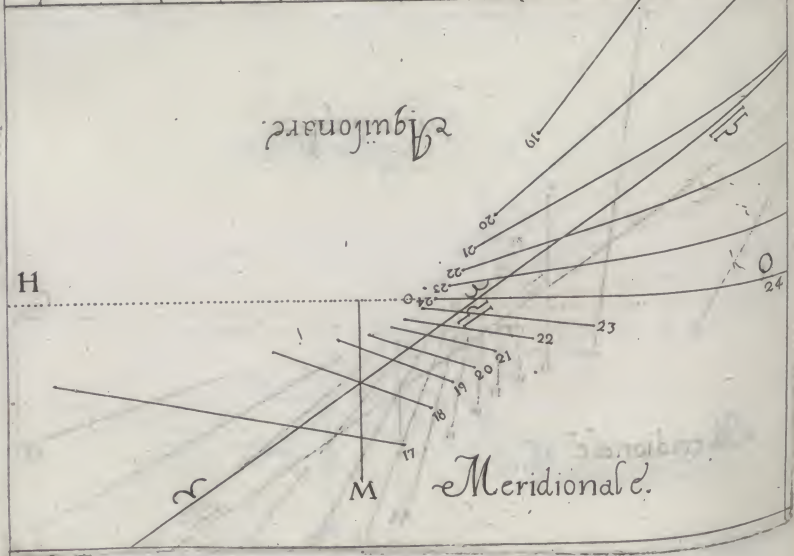
Tab. LXXXVII		Declinatio ad Ort. Gra. 43. Lat. 45.											
H. Merid.	Tropie Capric.				Aequinoctialis.				Tropie. Cancr.				H. Aquilo.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M	
23	278	8	340	25									1
22	285	12	47	21									2
21	291	40	23	58									3
20	298	8	14	40	308	3	112	47					4
19	305	10	9	20	316	14	35	13					5
18	315	7	5	38	325	43	19	53					6
17	336	46	2	45	337	58	13	24	338	13	83	22	7
16	53	33	1	41	355	10	9	21	347	53	36	26	8
15	103	11	3	49	19	24	7	30	359	44	23	39	9
14	118	10	6	58	47	57	7	28	14	0	18	30	10
13	126	5	11	10	72	31	9	14	30	15	16	59	11
12	133	1	17	37	90	0	12	53	46	57	17	40	12
11	139	25	30	8	102	25	19	26	62	19	20	59	13
10	146	5	71	30	112	0	34	2	75	18	29	23	14
9					120	15	101	39	85	58	51	32	15
8									94	46	324	19	16



Tab. LXXXVIII Declinatio ad Occas. Gra. 43. Lat. 45.

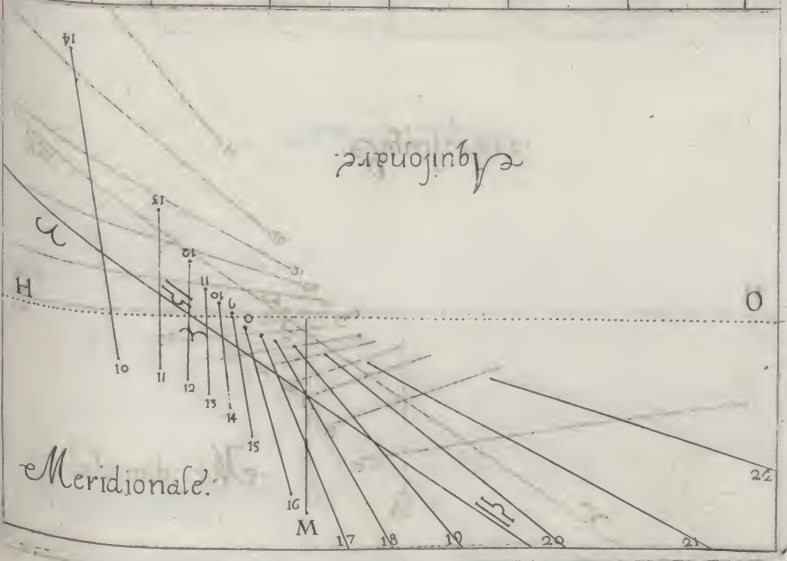
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.
15					26	30	335
16			51	57	112	47	17
17	77	47	76	18	43	46	35
18	71	6	31	0	34	17	19
19	64	46	17	59	22	2	13
20	57	39	11	23	4	50	9
21	49	43	7	7	340	36	7
22	35	27	3	56	312	3	7
23	349	28	1	45	287	29	9
24	270	0	2	41	270	0	12
25	247	6	5	30	257	35	19
26	236	34	9	9	248	0	34
27	229	53	14	23	239	45	101
28	223	21	23	24			
29	216	54	45	29			
30	209	52	242	42			

A. P. Pol.
P. M.
19 53 18

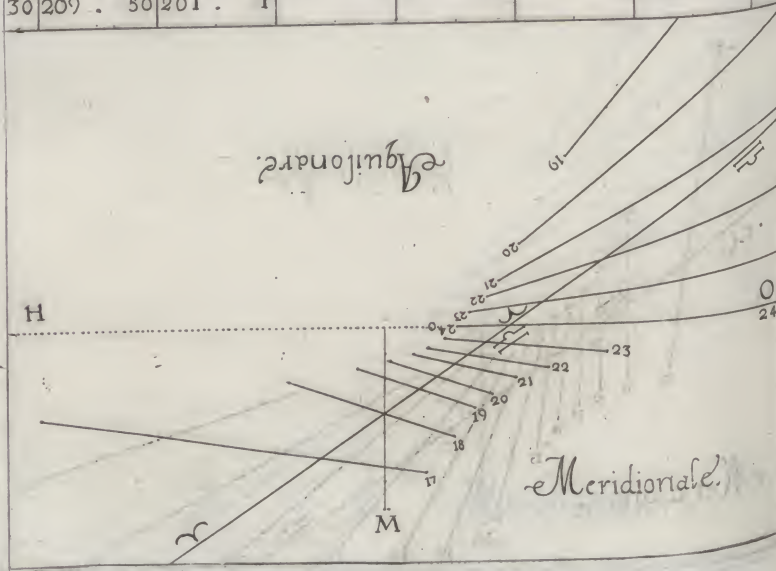


45.	Inc.ri.	Il. Aquil.
	mbra.	M
	26	9
	6	8
	32	7
	12	6
	42	5
	58	4
	41	3
	51	2
	41	1
	48	24
	23	
	22	
	21	
	20	
	19	
	18	
	17	
	16	
	15	
	14	
	13	
	12	
	11	
	10	
	9	
	8	

Declinatio ad Ort. Gra. 44. Lat. 45.														
Hæmerid.	Tropic. Capric.				Equinoctials.				Tropic. Cancr.				Hæmerid.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	MP	MG	M	P	MG	MP	M	G.	MP	M			
23	278	8	485	17										1
22	285	8	50	46										2
21	291	30	24	57										3
20	297	47	15	8	307	56	128	9						4
19	304	57	9	34	315	58	36	36						5
18	313	13	5	48	225	12	20	18						6
17	332	57	2	54	337	6	13	15	338	4	87	2	7	7
16	49	13	1	32	353	53	9	23	347	34	36	52	8	8
15	104	10	3	35	17	53	7	24	359	13	23	59	9	9
14	118	34	6	43	47	5	7	5	13	23	18	39	10	10
13	126	36	10	51	72	9	8	55	29	38	16	40	11	11
12	133	32	17	8	70	10	12	26	46	36	17	8	12	12
11			29	8	102	33	18	44	62	4	20	13	13	13
10			67	22	112	9	32	25	75	13	27	40	14	14
9					120	18	90	33	85	57	47	32	15	15
8									94	45	195	17	16	16

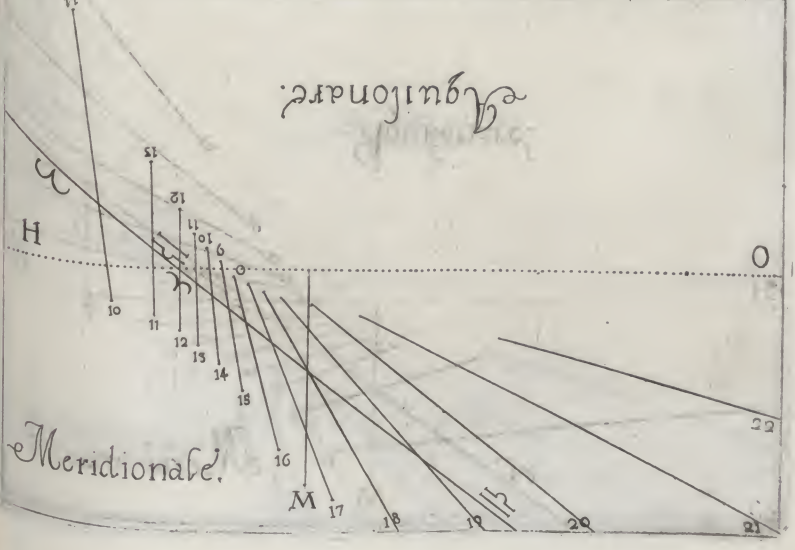


Tab.		Declinatio ad Occas. Gra. 44. Lat. 45.												H. Aquilo	
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Merid.		
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	MP.	MG.		G.	MP.	MG.		G.	MP.	M.				
15									26	32	429	38	9		
16					52	4	128	9	18	1	54	21	8		
17	77	48	84	40	44	2	36	36	7	39	29	42	7		
18	71	14	32	33	34	48	20	18	354	56	21	6	6		
19	64	59	18	36	22	54	13	15	339	44	17	27	5		
20	58	32	11	44	6	7	9	23	322	58	16	35	4		
21	50	38	7	20	342	7	7	24	306	28	18	6	3		
22	37	54	4	4	312	55	7	5	291	54	22	43	2		
23	356	6	1	43	287	51	8	55	279	49	33	38	1		
24	270	0	2	29	270	0	12	26	270	0	70	27	24		
25	246	10	5	16	257	27	18	44					23		
26	236	11	8	53	247	51	32	25					22		
27	229	14	14	1	239	42	90	33					21		
28	222	59	22	44									20		
29	216	41	43	37									19		
30	209	50	201	1									18		



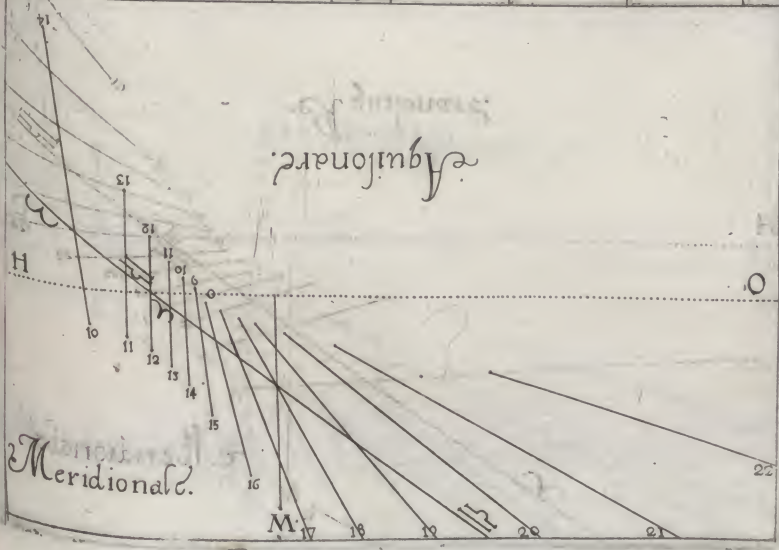
45.	
ncri.	H. Aguil.
nbra.	M
38	9
21	8
42	7
6	6
27	5
38	4
6	3
43	2
38	1
27	24
23	
22	
21	
20	
18	
18	

Tab. LXXXI. Declinatio ad Ort. Gra. 45. Lat. 45.											
Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.			
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M
23	273	8 1587	15								1
22	285	5 54	53								2
21	291	19 26	2								3
20	297	20 15	38	307	54 150	15					4
19	303	51 9	55	315	45 38	11					5
18	312	38 6	0	324	45 20	47					6
17	329	34 3	0	336	19 13	26	337	57 91	34	7	
16	43	37 1	22	352	37 9	24	347	16 37	23	8	
15	104	39 3	22	16	22 7	20	358	44 24	0	9	
14	119	37 6	29	45	45 7	3	12	45 18	29	10	
13	127	20 10	33	71	54 8	37	29	1 16	22	11	
12	133	59 16	41	90	0 12	0	46	0 16	41	12	
11	140	4 28	15	102	43 18	4	61	46 19	53	13	
10	146	22 63	43	112	19 30	54	75	6 26	26	14	
				120	22 81	6	85	56 44	13	15	
							94	45 151	58	16	



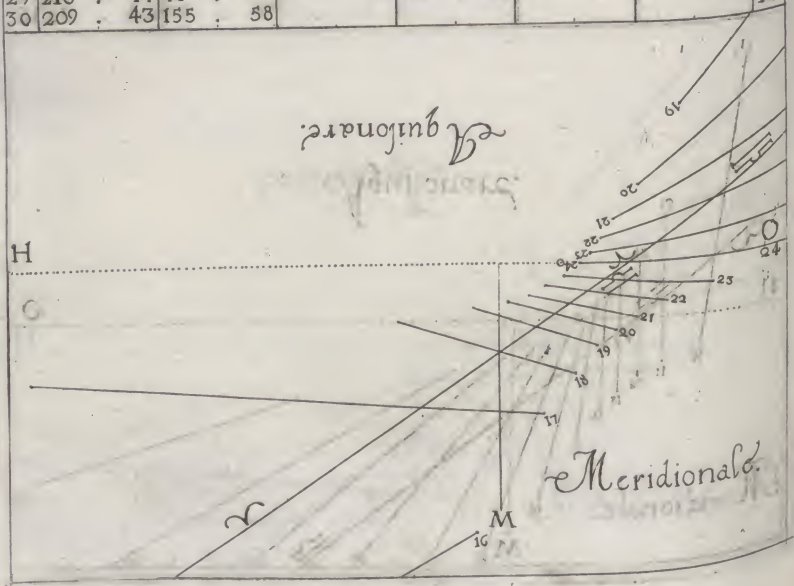
45.	H. Aquil.
cri.	bra.
M.	o.
52 9	
54 8	
56 7	
2 6	
14 5	
12 4	
34 3	
51 2	
54 1	
43 24	
23	
22	
21	
20	
19	
18	
17	
16	
15	
14	
13	
12	
11	
10	
9	
8	

Tab. XXXIII.		Declinatio ad Ort. Gra. 46. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M	G.	M P.	M	G.	M P.	M				
23	278	9	1290	15									1
22	285	2	59	36									2
21	291	11	27	10									3
20	297	2	16	9	307	54	182	17					4
19	302	53	10	13	315	31	39	52					5
18	311	7	6	12	324	17	21	17					6
17	326	38	3	8	335	28	13	38	336	50	96	21	7
16	36	38	1	15	351	21	9	28	346	47	37	52	8
15	105	40	3	9	14	45	7	15	358	14	24	2	9
14	120	13	6	15	44	30	6	51	12	8	18	20	10
13	128	29	10	16	71	17	8	19	28	31	16	5	11
12	134	30	16	15	90	0	11	35	45	30	16	15	12
11	140	26	27	24	102	51	17	24	61	29	18	53	13
10	146	31	60	31	112	27	29	27	74	59	25	17	14
9	151	15			120	27	73	25	88	55	41	24	15
8								94	47	124	38	16	

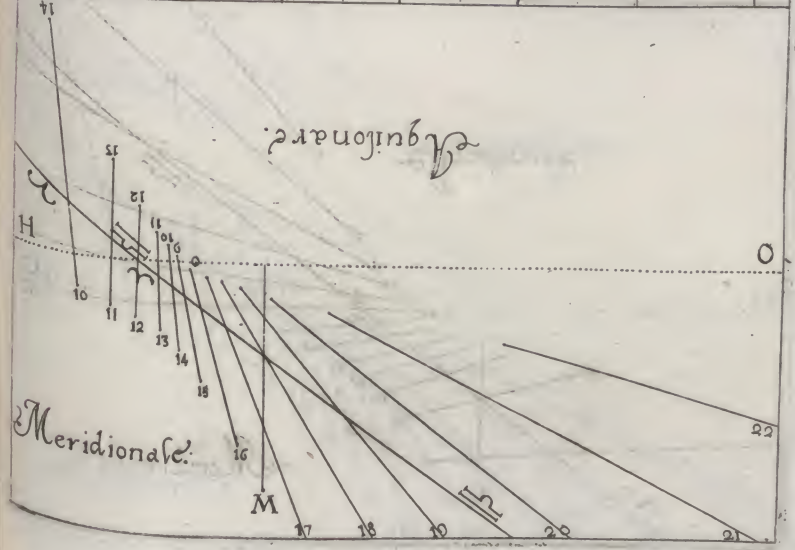


Tab. LXXXIV. Declinatio ad Occas. Grad. 46. Lat. 45.

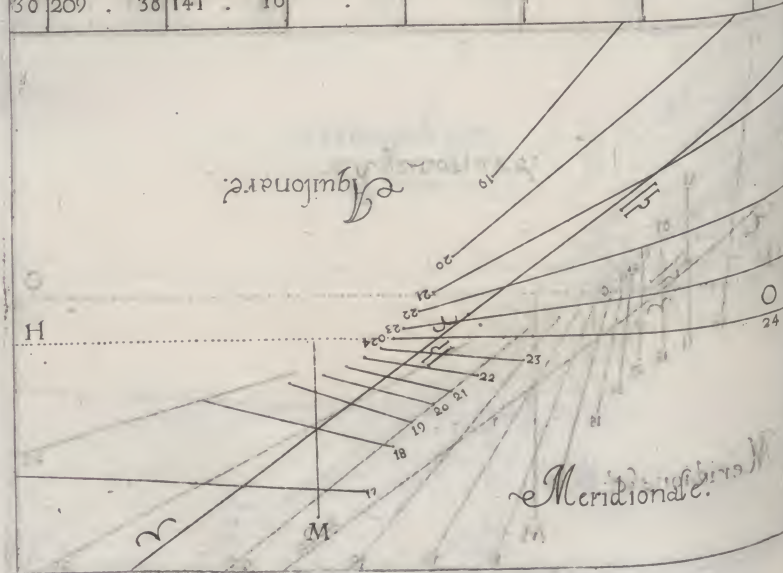
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Merid.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M P.	M G.	M P.	M G.	M P.	M
15					26	35	982 . 43
16			52 .	5	182 .	17	18 . 25
17	77 .	52	112 .	17	44 .	29	39 . 52
18	71 .	27	36 .	11	35 .	43	21 . 17
19	65 .	18	19 .	54	24 .	32	13 . 38
20	59 .	25	12 .	27	8 .	39	9 . 28
21	52 .	31	7 .	49	348 .	15	7 . 15
22	42 .	5	4 .	23	315 .	30	6 . 51
23	9 .	2	1 .	44	288 .	43	8 . 19
24	270 .	0	2 .	3	270 .	0	11 . 35
25	244 .	23	4 .	49	257 .	9	17 . 24
26	235 .	46	8 .	22	247 .	33	29 . 27
27	228 .	3	13 .	17	239 .	33	73 . 25
28	222 .	10	21 .	29			
29	216 .	14	40 .	18			
30	209 .	43	155 .	58			



Tab. LXXXV.		Declinatio ad Ort. Gra. 47. Lat. 45.											
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Cancr.				H. Aquilo
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	M.		
22	284	58	65	58									2
21	290	59	28	29									3
20	296	42	16	42	307	55	230	17					4
19	302	39	10	31	315	18	41	43					5
18	309	42	6	24	323	49	21	48					6
17	323	9	3	15	334	42	13	51	337	44	102	15	7
16	26	58	1	8	350	7	9	31	346	38	38	26	8
15	106	51	2	56	13	16	7	11	357	43	24	5	9
14	121	38	6	1	43	10	6	39	11	28	18	11	10
13	128	43	9	59	70	45	8	2	27	41	15	49	11
12	135	2	15	50	90	0	11	11	44	57	18	50	12
11	140	44	26	36	103	1	16	53	61	9	18	16	13
10	146	42	57	41	112	36	28	8	74	51	24	25	14
9	153	24	68	29	120	30	67	2	85	53	38	57	15
8									94	47	107	36	16



Tab. LXXXVII		Declinatio ad Occas. Gra. 47. Lat. 45.												LXXXVIII	
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.		
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.			
15									26	36	2152.	16	9		
16				52	5	230		17	18	36	59	6	8		
17	77	54	258	50	44	42	41	43	8	50	39	23	7		
18	71	33	38	25	36	11	21	48	356	37	20	56	6		
19	66	48	20	43	25	18	13	51	341	43	16	50	5		
20	59	54	12	50	9	53	9	31	324	47	15	53	4		
21	52	42	8	2	346	44	7	11	307	45	16	33	3		
22	44	23	4	32	316	50	6	39	292	33	20	18	2		
23	16	32	1	48	289	15	8	2	280	1	28	54	1		
24	270	0	1	40	270	0	11	11	270	0	53	39	24		
25	243	15	4	36	256	59	16	53	261	52	781	14	23		
26	233	19	8	6	247	24	28	8	252	50	Mt. Pol. P. M.		22		
27	227	34	12	57	239	29	67	2	243	48			21		
28	221	45	20	54	223	34	25	43	234	46			20		
29	215	58	38	51	217	19	55	24	225	44			19		
30	209	38	141	10							21	48	18		

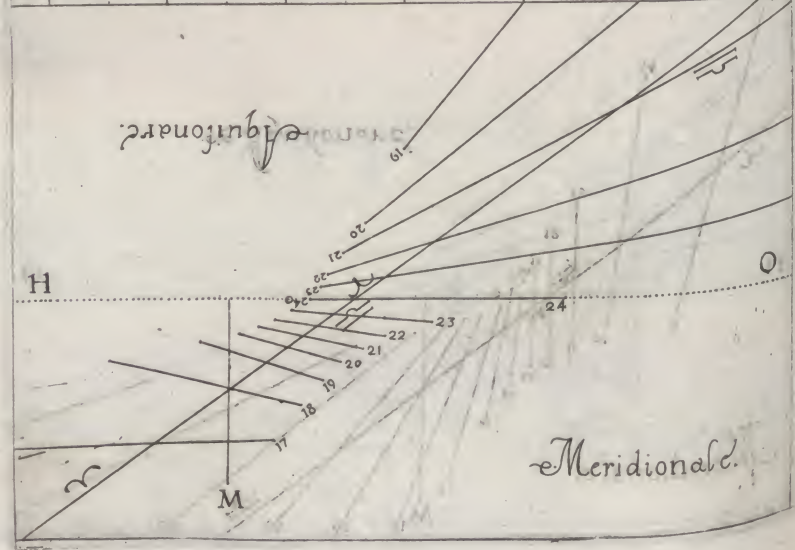


24

This technical drawing illustrates the internal structure of a ship's hull, likely a cross-section. The hull is shown with a curved bottom and a flat top. The internal structure is composed of numerous longitudinal and transverse members, including ribs, bulkheads, and stiffeners. The drawing is labeled with various numbers and letters to identify specific components:

- Numbers 1-22:** These numbers are placed along the length of the hull, indicating different sections or components. For example, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, and 22 are distributed across the hull's length.
- Letters:** The letters 'H', 'M', and 'L' are used to denote specific structural elements or sections. 'H' is located near the bow, 'M' is near the midship, and 'L' is near the stern.
- Annotations:** The word "Meridionale" is written in a cursive script at the bottom left, indicating the orientation of the section. The word "Equidistant" is written in a cursive script at the top right, indicating the spacing of the sections.

Trop.		Declinatio ad Occas Gra. 48. Lat. 45.												Trop.	
LXXXVII		Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				LXXXVIII	
H. Merid.	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		H. Aquil.		
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.			
15														9	
16					52	11	1314.	49	18	49	60	47		8	
17	77	54	165	24	44	54	43	43	9	13	30	37		7	
18	71	39	40	39	36	37	22	21	357	14	20	52		6	
19	66	0	21	29	26	6	14	3	342	24	16	38		5	
20	60	29	13	14	11	8	9	35	325	27	15	13	4		
21	53	23	8	17	348	32	7	7	308	11	16	5	3		
22	46	8	4	43	318	9	6	28	292	46	19	33	2		
23	23	29	1	51	289	43	7	44	280	6	27	30	1		
24	270	0	1	37	270	0	10	48	270	0	49	17	24		
25	241	54	4	23	256	49	16	11	261	52	271	14	23		
26	232	59	7	52	257	14	26	56	24				22		
27	226	59	12	37	239	24	61	44					21		
28	221	21	20	21									20		
29	215	44	37	27									19		
30	209	34	126	34									18		

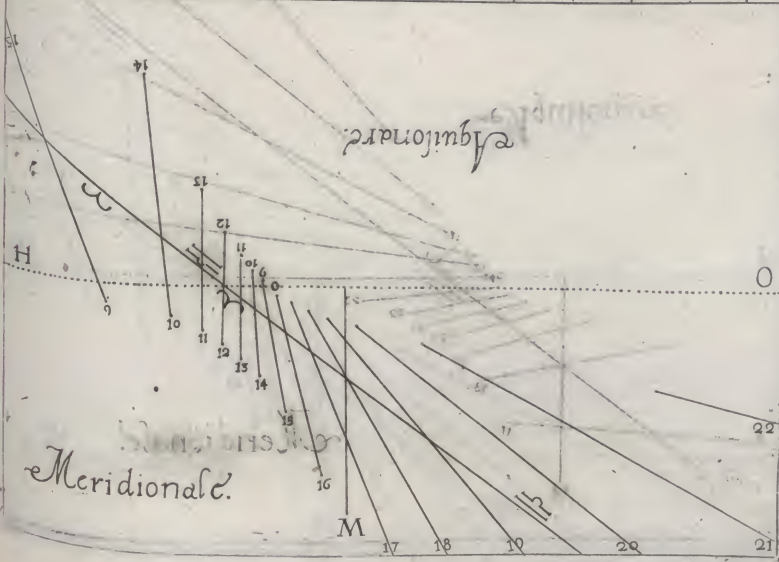


45.

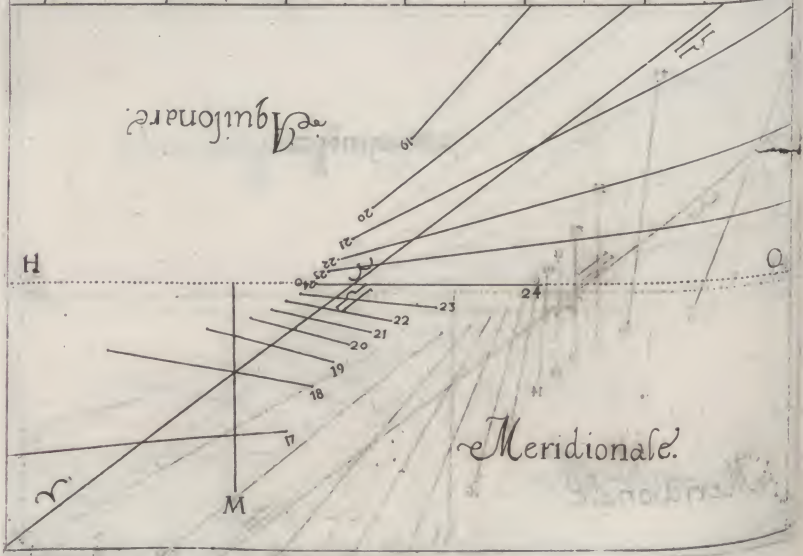
ncr.	HAgul.
bra.	
M	
7	
47 8	
37 7	
52 6	
38 5	
13 4	
5 3	
33 2	
30 1	
17 24	
14 23	
22	
21	
20	
19	
18	

Tab. LXXXIX. Declinatio ad Ort. Gra. 49. Lat. 45.

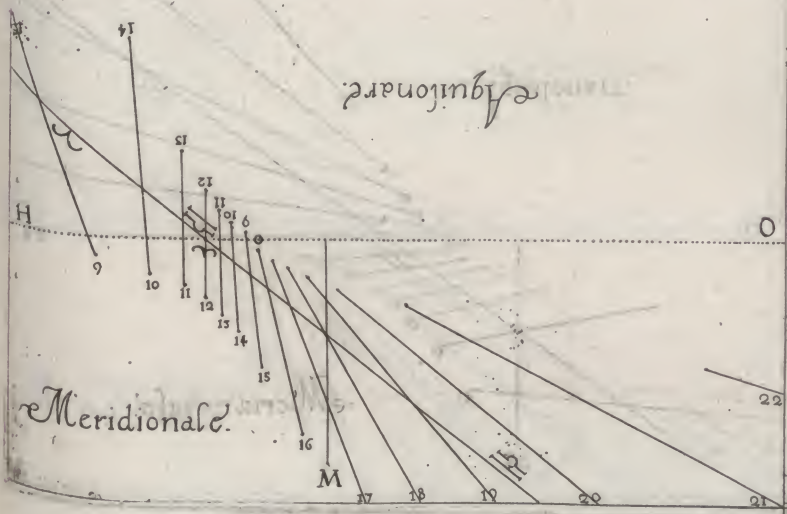
HAgul.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		HAgul.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	M P.	MG.	M P.	MG.	M P.	M
22	284 .	53 81 .	29				2
21	290 .	42 31 .	17				3
20	296 .	5 17 .	51 307 .	40 496 .	57		4
19	301 .	27 11 .	10 314 .	56 46 .	0		5
18	307 .	53 6 .	49 322 .	58 22 .	55		6
17	317 .	42 3 .	32 333 .	10 14 .	16 337 .	31 115 .	28 7
16	327 .	31 .	1 347 .	40 9 .	39 346 .	3 39 .	33 8
15	109 .	48 21 .	0 31 9 .	49 71 .	4 356 .	44 24 .	10 9
14	123 .	51 5 .	0 35 40 .	25 6 .	18 10 .	10 17 .	57 10
13	130 .	28 9 .	27 69 .	44 7 .	29 26 .	19 15 .	10 11
12	136 .	9 15 .	3 90 .	0 10 .	27 43 .	51 15 .	4 12
11	141 .	26 25 .	7 103 .	22 15 .	33 60 .	29 17 .	7 13
10	147 .	5 52 .	40 112 .	58 25 .	49 74 .	34 22 .	20 14
9	153 .	26 19 67 .	10 120 .	42 57 .	7 85 .	51 34 .	38 15
8					94 .	48 81 .	23 16



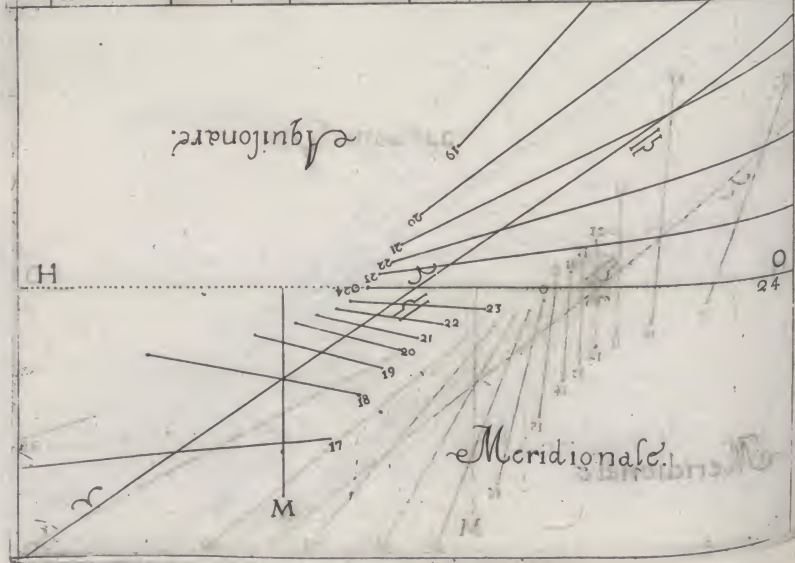
Tab. C.		Declinatio ad Occas. Gra. 49. Lat. 45.												H. Merid.					
H. Merid.	Tropic. Caprie.				Aequinoctialis.				Tropic. Canceri.				H. Aquilo.						
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.								
	G.	M	P	M	G.	M	P	M	G.	M	P	M							
16					52	20	49	6	27	18	59	62	39	8					
17	77	.	56	236	.	54	45	.	4	46	.	0	35	30	52	7			
18	71	.	44	43	.	25	37	.	2	22	.	35	357	46	20	50	6		
19	66	.	14	22	.	20	26	.	50	14	.	16	343	.	5	16	127	5	
20	60	.	48	13	.	39	12	.	20	9	.	39	326	.	4	14	556	4	
21	54	.	37	8	.	32	350	.	11	7	.	4	308	.	39	15	.	40	3
22	47	.	56	4	.	53	319	.	33	6	.	18	293	.	0	18	.	53	2
23	28	.	16	1	.	57	290	.	16	7	.	29	280	.	10	26	.	19	1
24	270	.	0	1	.	23	270	.	0	10	.	27	270	.	0	46	.	2	24
25	240	.	22	4	.	10	256	.	38	15	.	33	261	.	53	219	.	15	23
26	232	.	8	7	.	38	247	.	2	25	.	47							22
27	226	.	14	12	.	18	239	.	18	57	.	7							21
28	220	.	51	19	.	50													20
29	218	.	26	36	.	15													19
30	209	.	26	117	.	8													18
									</										



Tab. 1.		Declinatio ad Ort. Gra. 50. Lat. 45.												
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M		
2	284	43	96	52										2
1	290	37	32	38										3
0	295	47	18	23	307	48	197	21						4
9	300	54	11	27	314	48	47	55						5
8	305	42	7	2	322	37	23	32						6
7	315	11	3	40	332	31	14	9	337	30	120	14	7	
6	355	27	0	59	346	36	9	42	345	51	39	54	8	
5	111	20	2	20	8	24	7	00	1	356	22	24	9	9
4	125	37	5	25	39	17	6	8	9	40	17	46	10	
3	131	27	9	14	69	25	7	13	25	49	15	5	11	
2	136	45	14	41	90	0	10	6	45	28	14	42	12	
1	141	51	24	32	103	52	15	9	60	19	16	35	13	
0	147	17	50	49	113	13	25	27	74	34	21	32	14	
					120	55	53	46	85	56	32	51	15	
								94	54	72		37	16	

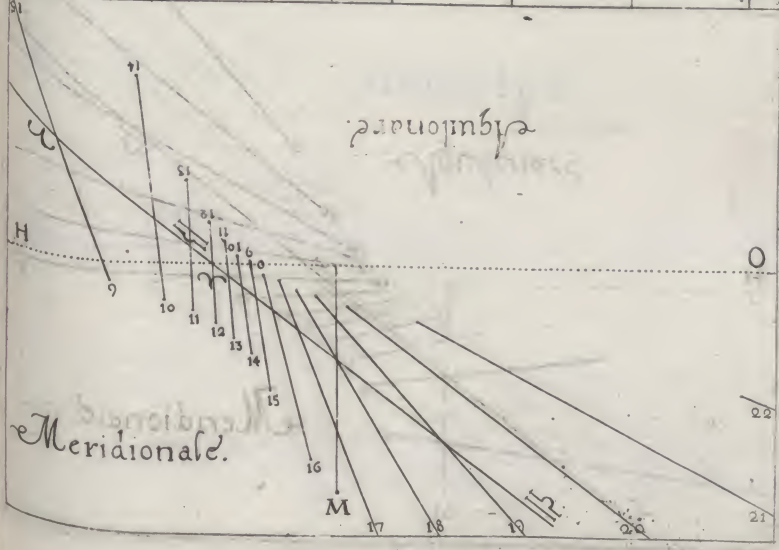


Tab. CII.		Declinatio ad Occas. Gra. 50. Lat. 45.												Tab. CIII.		
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.	H. Merid.	G.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.					
	G.	M	P	M	G.	M	P	M	G.	M	P	M				
16					52	12	917	21	19	6	64	6	8		22	284
17	77	51	296	38	45	12	47	55	9	84	31	0	7	21	290	295
18	71	47	45	57	37	23	23	23	358	14	20	45	6	20	295	300
19	66	27	23	5	27	29	14	19	343	39	16	14	5	19	300	305
20	61	18	14	0	13	24	9	42	326	36	14	37	4	18	305	310
21	56	13	8	46	351	36	7	1	309	0	15	14	3	17	312	317
22	49	17	5	2	320	43	6	18	293	8	18	16	2	16	317	322
23	32	56	2	2	290	35	7	13	280	10	25	14	1	15	322	327
24	269	41	1	14	270	0	10	6	270	0	43	33	24	14	327	332
25	239	10	4	1	256	8	15	9	261	47	153	23	23	13	332	337
26	231	24	7	27	246	47	25	27					22	12	337	342
27	225	27	12	3	239	5	53	46					21	11	342	347
28	220	23	19	26									20	10	347	352
29	215	8	35	18									19	9	352	357
30	209	19	109	14									18	8	357	362

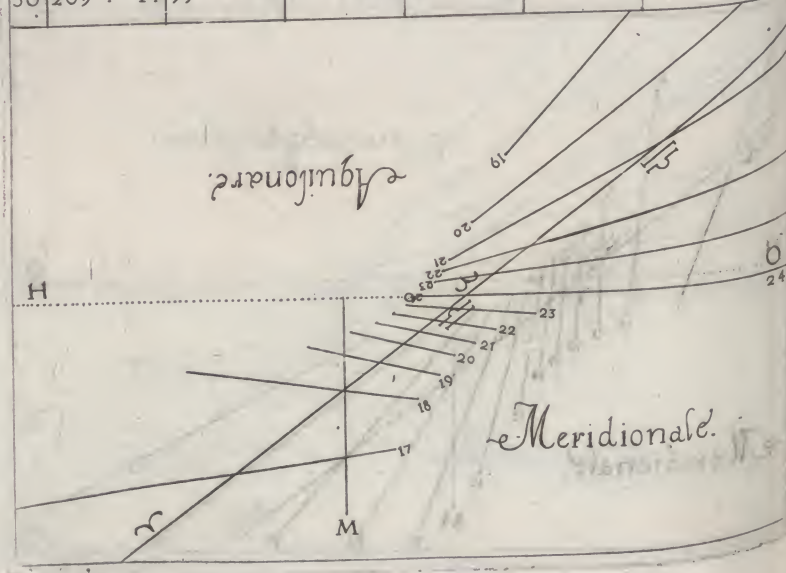


45.
 Cri.
 nbra.
 M
 . 6 8
 . 0 7
 . 45 6
 . 14 5
 . 37 4
 . 14 3
 . 16 2
 . 14 1
 . 33 24
 . 23 23
 . 22
 . 21
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 . 18

Tab. 75. Declinatio ad Ort. Gra. 51. Lat. 45.														
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	M.		
22	284	49	104	31										2
21	290	28	34	33										3
20	295	31	19	6										4
19	300	16	11	51	314	35	51	6						5
18	305	23	7	17	322	4	24	8						6
17	312	48	3	52	331	40	14	45	337	20	132	17		7
16	343	9	1	3	345	15	9	49	345	27	40	46		8
15	112	42	2	7	6	26	6	59	355	44	24	18		9
14	125	35	5	11	37	24	5	58	8	50	17	42		10
13	132	28	8	58	68	33	6	56	24	53	14	50		11
12	137	23	14	21	90	20	9	43	42	40	14	20		12
11	142	13	23	46	103	42	14	35	59	47	16	2		13
10	147	27	48	22	113	19	23	47	74	17	20	36		14
9	153	28	44	8	120	56	49	40	85	48	31	0		15
8					122	28	37	61	43	94	50	64	45	16

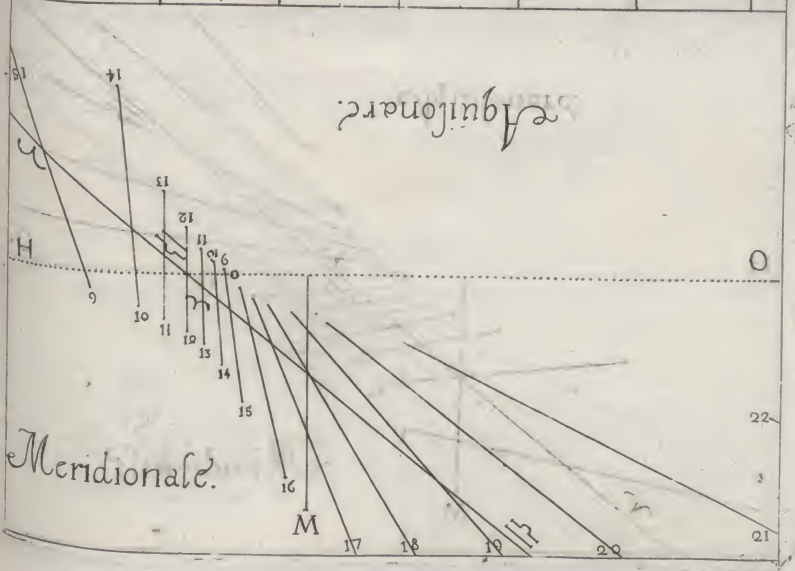


Tab. CIII.		Declinatio ad Occas. Gra. 51. Lat. 45.										H. Merid.	
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G . M . P . M	G . M . P . M	G . M . P . M	G . M . P . M	G . M . P . M	G . M . P . M	G . M . P . M	G . M . P . M					
16									19 . 20	66 . 46	8		
17	77 . 56	625 . 12	45 . 25	51 . . 6	10 . . 21	31 . 26					7		
18	71 . 54	49 . 48	37 . 56	24 . . 9	358 . 55	20 . 47					6		
19	66 . 38	24 . 9	26 . 20	14 . 45	344 . 29	16 . 7					5		
20	61 . 47	14 . 31	14 . 45	9 . 49	327 . 26	14 . 21					4		
21	56 . 41	9 . 4	353 . 33	71 . . 0	309 . 39	14 . 49					3		
22	50 . 33	5 . 15	322 . 37	51 . . 58	293 . 31	17 . 37					2		
23	38 . 16	2 . 12	291 . 27	6 . . 57	280 . 20	24 . 5					1		
24	270 . 0	0 . 58	270 . 0	9 . 44	270 . 0	40 . 14					24		
25	237 . 35	3 . 47	256 . 18	14 . 35	261 . 49	130 . 10					23		
26	230 . 16	7 . 11	246 . 41	23 . 46							22		
27	224 . 45	11 . 43	239 . 14	49 . 36							21		
28	219 . 54	18 . 52	232 . 32	3438 . 22							20		
29	214 . 52	33 . 58									19		
30	209 . 14	99 . 9									18		

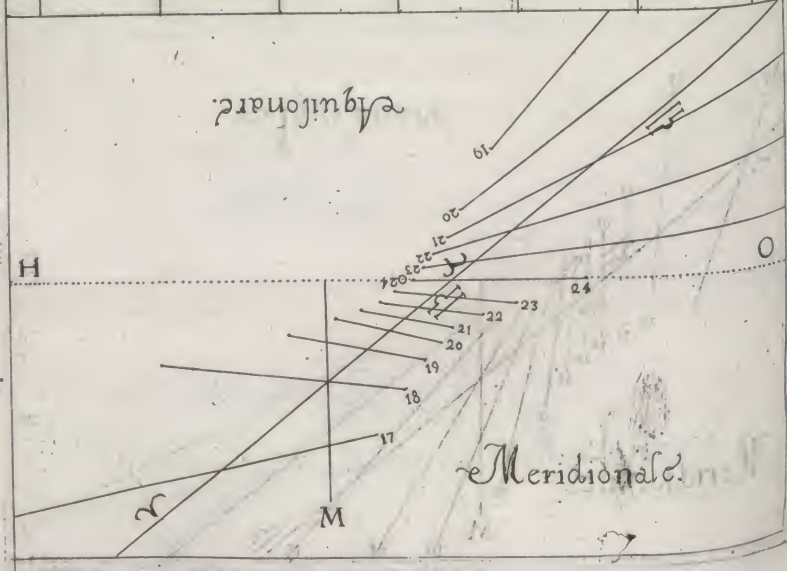


45.	H. Aquil.
ncri.	
mbra.	
M	
46	8
26	7
47	6
7	5
21	4
49	3
37	2
5	1
14	24
10	23
22	
21	
20	
19	
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8	

Tab. CV.		Declinatio ad Ort. Gra. 52. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P	M	G	M	P	M	G	M	P	M	
22	284	47	122	45									2
21	290	20	36	30									3
20	295	14	19	48									4
19	299	49	12	13	314	24	54	8					5
18	304	43	7	31	321	46	24	49					6
17	311	36	4	2	330	57	15	0	337	15	142	55	7
16	331	44	1	7	344	3	9	55	345	10	41	29	8
15	114	35	1	56	4	42	6	57	355	14	24	23	9
14	126	19	4	59	35	45	5	48	8	9	17	37	10
13	133	11	8	43	67	54	6	40	24	8	14	37	11
12	137	59	14	0	90	0	9	23	42	2	14	0	12
11	142	35	23	8	103	55	14	5	59	23	15	33	13
10	147	39	46	27	113	32	22	51	74	7	19	50	14
9	153	0	34	6	121	6	46	34	85	46	29	26	15
8					127	41	69	12	94	51	58	59	16

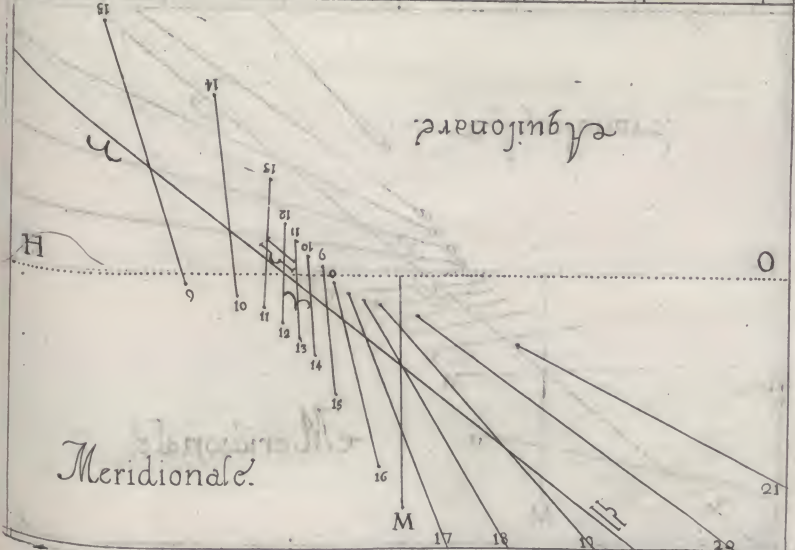


Tab. Cvi.		Declinatio ad Occas. Gra. 52. Lat. 45.												H. Merid.
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Cancr.				H. Aquil.	
	Arcus.		Vmbra		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G .	M P .	M G .		G .	M P .	M G .		G .	M P .	M G .			
16										19	31	69	0	8
17	77	56	3174	34	45	36	54	8	10	45	31	44	7	6
18	71	58	53	28	38	14	24	49	359	34	20	47	5	5
19	66	50	25	8	29	3	15	0	345	14	15	58	4	4
20	62	14	15	0	15	57	9	55	328	10	14	5		
21	57	33	9	22	355	18	6	57	310	11	14	24	3	
22	51	0	5	28	323	15	5	48	293	49	17	1	2	
23	41	59	2	20	292	6	6	40	280	27	23	3	1	
24	270	0	0	46	270	0	9	23	270	0	37	38	24	
25	235	23	3	35	256	5	14	5	261	49	108	19	23	
26	229	7	6	58	246	28	22	51					22	
27	224	9	11	25	238	54	46	34					21	
28	219	29	18	23	232	19	699	12					20	
29	214	37	32	51									19	
30	209	11	92	49									18	

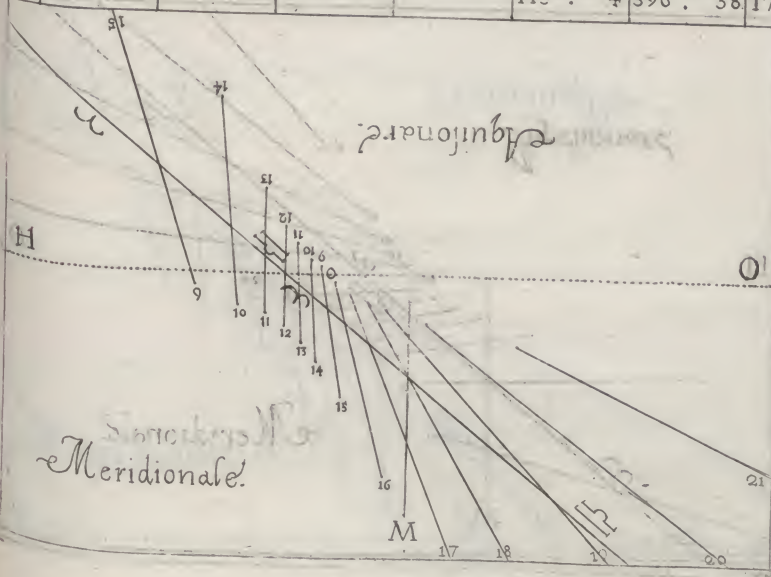


45.	
cri.	H. Aquil.
tra.	
M	
0 8	
44 7	
47 6	
58 5	
5 4	
24 3	
1 2	
3 1	
38 24	
19 23	
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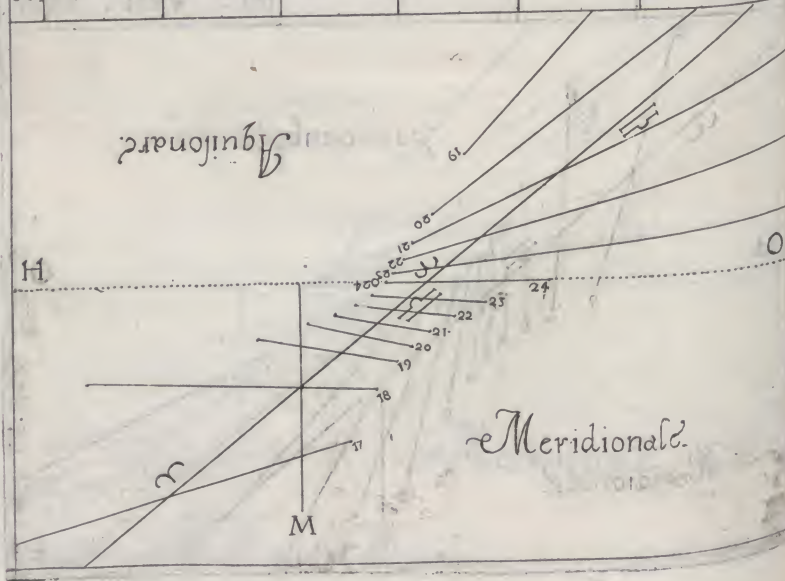
Declinatio ad Ort. Gra. 53. Lat. 45.											
Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.			
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	M.
22	284	45	166	4							
21	290	12	38	44							
20	294	57	20	53							
19	299	23	16	36	314	16	57	31			
18	303	50	7	46	321	24	25	32			
17	310	21	4	13	330	11	15	17	337	11	192
16	323	34	1	14	342	55	10	0	344	55	42
15	120	31	1	43	3	0	6	56	354	46	24
14	129	17	4	47	33	58	5	39	7	29	17
13	134	5	8	29	67	10	6	26	23	28	14
12	138	37	13	40	90	0	9	2	41	23	13
11	143	2	22	34	104	10	13	36	58	58	15
10	147	55	44	48	113	46	22	0	73	57	19
9	153	31	290	23	121	12	43	52	85	43	28
8					127	42	434	8	94	52	54
7								192	0	1793	40



Tab. cviii.		Declinatio ad Ort. Gra. 54. Lat. 45.																					
cri. ora.	H. Aquila	H. Merid.	Tropic. Capric.				Æquinoctialis.				Tropic. Cancr.				H. Aquila								
			Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.										
			G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M									
	M		22	41	8	284 .	44	189 .	51														
			21	4	7	290 .		7	41 .	0													2
			20	47	6	294 .		47	21 .	17													3
			19	50	5	298 .		53	12 .	59	314 .		5	61 .	21								4
			18	50	4	302 .		59	8 .	1	321 .		1	26 .	16								5
																							6
			17	1	3	310 .		8	4 .	24	329 .		38	15 .	34	337 .		7	171 .	37			7
			16	27	2	316 .		20	1 .	22	341 .		46	10 .	7	344 .		37	42 .	59			8
			15	8	1	119 .		43	1 .	33	1 .		16	6 .	56	354 .		15	24 .	36			9
			14	36	24	131 .		3	4 .	36	32 .		13	5 .	31	6 .		42	17 .	28			10
			13	32	23	135 .		0	8 .	16	66 .		25	6 .	11	22 .		36	14 .	14			11
			12			139 .		21	13 .	22	70 .		0	8 .	43	40 .		44	13 .	1			12
			11			143 .		27	22 .	0	104 .		18	13 .	9	58 .		33	14 .	38			13
			10			148 .		5	43 .	2	113 .		58	21 .	11	73 .		46	18 .	24			14
			9			153 .		33	236 .	54	121 .		21	41 .	26	85 .		41	26 .	46			15
			8								127 .		43	267 .	42	94 .		53	49 .	59			16
			7													113 .		4	396 .	38			17

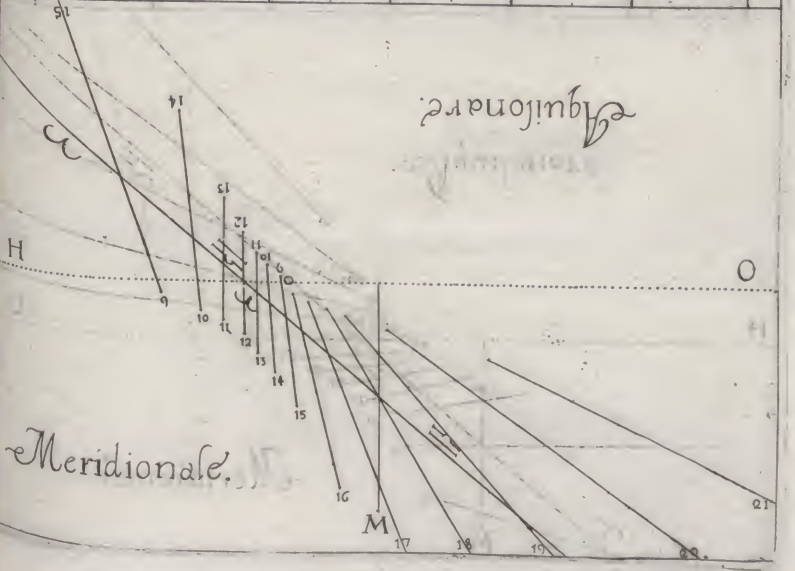


Tab. CX.		Declinatio ad Occas. Gra. 54. Lat. 45.												H. Merid.			
H. Merid.	Tropic. Capric.			Aquinoc. tialis.			Tropic. Cancr.			H. Aquilo							
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.									
	G.	M.	P.	G.	M.	P.	G.	M.	P.	M.							
16							19		50	74	14	8					
17				45		55	61		21	11	29	26	7				
18	72		6	63		12	38		59	26	16	0	48	6			
19	67		12	27		23	30		22	15	34	346	43	15	42	5	
20	62		53	18		59	18		14	10	7	329	40	13		35	4
21	58		2	9		55	358		44	6	56	311	19	13		39	3
22	55		16	5		53	327		47	5	31	294	26	15		55	2
23	48		33	2		39	293		35	6	11	280	37	21		11	1
24	270		0	0		22	270		0	8	43	270	0	33		35	24
25	233		17	3		13	255		42	13	2	261	47	80		27	23
26	226		36	6		33	246		2	21	11	32					22
27	222		30	10		53	238		39	41	26						21
28	218		45	17		32	232		17	267	42						20
29	214		0	30		56											19
30	208		57	81		46											18
														</			



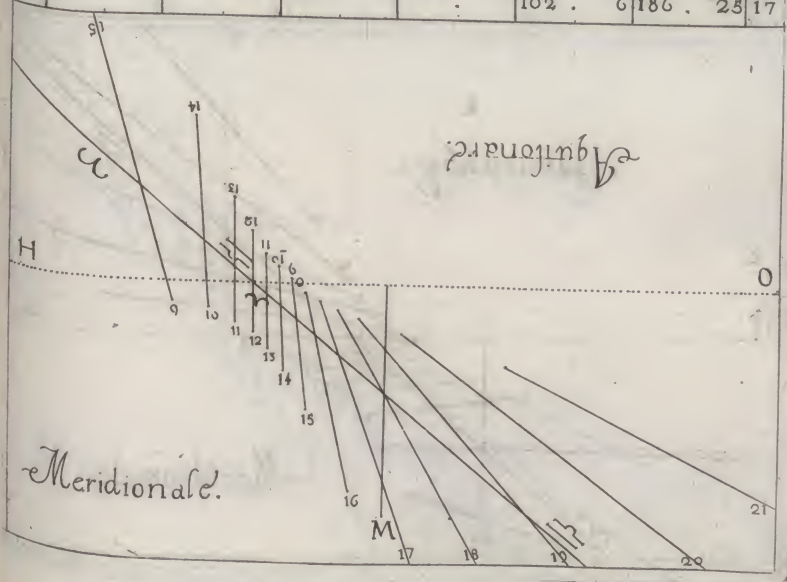
45.	
cri.	H. Aquilo
bra.	
M	
14 8	
26 7	
48 6	
42 5	
35 4	
39 3	
55 2	
11 1	
35 24	
27 23	
22	
21	
20	
19	
16 18	

Declinatio ad Ort. Gra. 55. Lat. 45.													
H. Merid.	Tropie. Capric.				Aequinoctialis.				Tropie. Cancr.				H. Aquilo.
	Arcus.		Vmbra		Arcus.		Vmbra		Arcus.		Vmbra.		
	G.	M P	M	G	M	P	M	G	M	P	M		
22	284	44	257	40									2
21	290	1	43	46									3
20	274	25	22	8									4
19	298	31	13	24	314	2	65	43					5
18	302	12	8	16	320	41	27	4					6
17	306	43	4	35	328	54	15	51	337	3	188		7
16	309	49	1	32	340	41	10	14	344	22	43	46	8
15	129	11	1	22	359	29	6	86	353	48	24	42	9
14	133	8	4	26	30	20	5	24	6	8	17	23	10
13	136	10	8	3	68	38	5	57	21	50	14	1	11
12	139	59	13	4	90	0	8	24	40	2	13	4	12
11	143	56	21	29	104	34	12	44	58	8	14	12	13
10	148	22	41	42	114	13	20	26	73	35	17	46	14
9	153	56	20	5	121	30	39	13	85	40	25	36	15
8					127	44	20	5	94	55	47	38	16
7									102	5	256	4	17

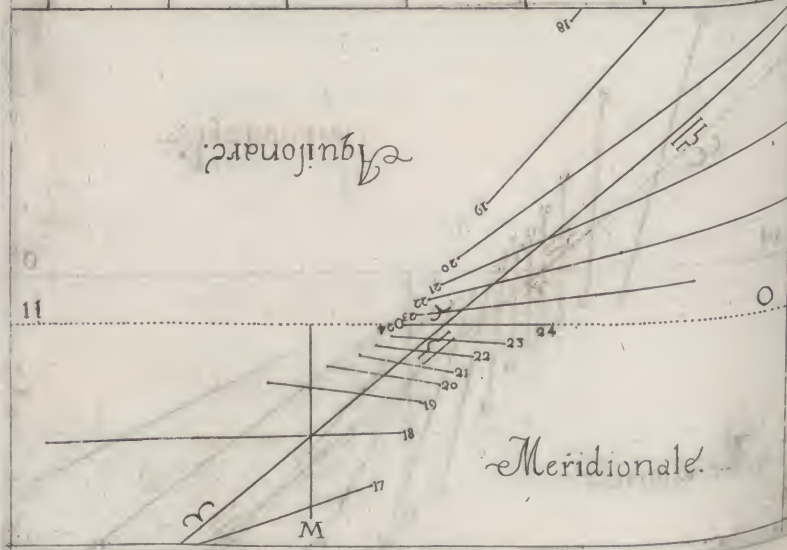


5.	
ncri.	H. Agul.
nbra.	
M	
14 8	
46 7	
48 6	
34 5	
20 4	
19 3	
23 2	
26 1	
53 24	
46 23	
22	
21	
20	
Pol.	
M	
19	
8	
4	

Tab. CXIII.		Declinatio ad Ort. Gra. 56. Lat. 45.											
H. Merid.	H. Agul.	Tropie Capric.			Aequinoctialis.			Tropie Cancr.			H. Agul.	H. Merid.	H. Agul.
		Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.			
		G.	M.	P.	G.	M.	P.	G.	M.	P.			
22	14	84	43	4	4	24					2		
21	46	289	55	46	37						3		
20	48	294	19	22	57						4		
19	34	298	1	13	49	313	50	70	42		5		
18	20	301	16	8	33	320	18	27	52		6		
17	19	304	7	4	48	328	19	16	9	337	1	212	26
16	23	301	33	1	42	339	33	10	21	344	6	44	35
15	26	138	38	1	13	357	48	6	56	353	18	24	51
14	53	134	50	4	15	28	24	5	16	5	25	17	18
13	46	137	38	7	52	64	46	5	42	21	1	13	51
12	22	140	44	12	47	90	0	8	6	39	19	12	47
11	21	144	23	20	59	104	48	12	18	57	40	13	46
10	20	148	37	40	18	114	27	19	42	73	23	17	8
9	19	153	39	182	17	121	40	37	16	85	37	24	26
8						127	47	166	4	94	56	43	22
7									102	6	186	25	17

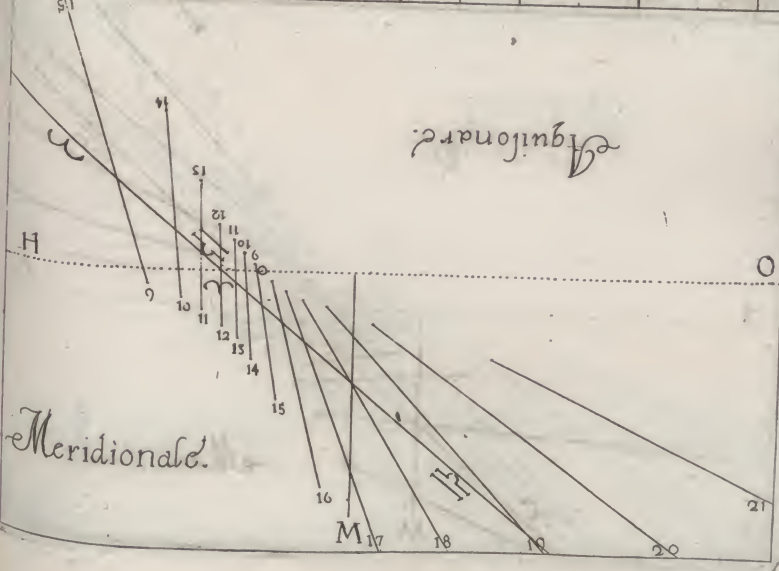


Tab. CXIII.		Declinatio ad Occas. Gra. 56. Lat. 45.										H. Merid.
		Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.						H. Aquila
		Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.					
		G.	M P.	M G.	M P.	M G.	M P.					
16						20	19	80		8	8	
17				46	10	70	42	12	12	33	7	
18	72	13	77	13	39	42	27	52	1	49	20	50
19	67	33	29	59	31	41	16	9	348	13	15	27
20	63	34	17	4	20	27	10	21	331	13	13	8
21	66	8	10	34	2	12	6	56	312	30	12	57
22	57	1	6	19	331	36	5	16	295	4	14	54
23	54	47	3	0	278	14	5	42	280	53	19	39
24	270	0	0	10	270	0	8	6	270	0	30	12
25	225	39	2	53	253	12	12	18	251	45	65	4
26	223	38	6	11	245	33	19	40				22
27	220	41	10	24	238	20	37	16				21
28	217	17	16	46	232	13	16	6				20
29	213	18	29	16								19
30	208	40	73	17								18

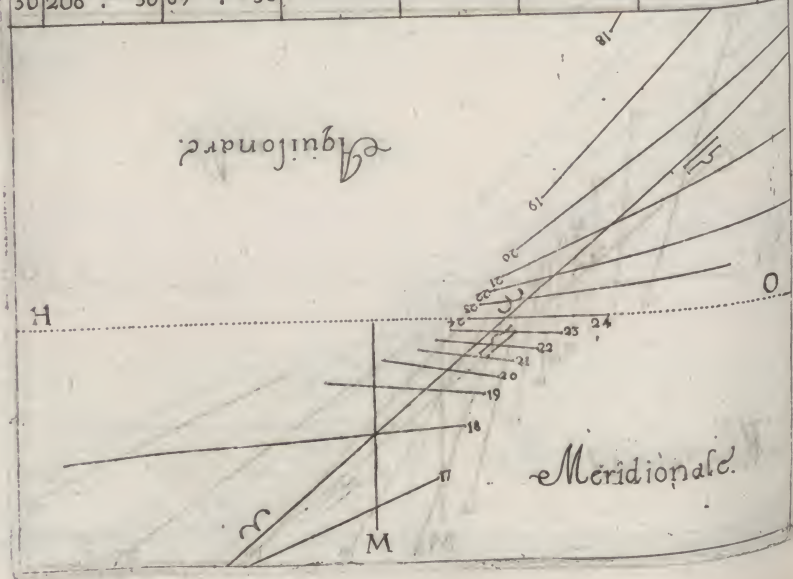


45.	
ncri.	H. Aquilo
mbra.	M
8	8
7	7
50	6
27	5
8	4
57	3
54	2
39	1
12	24
4	23
22	
21	
20	
19	
18	
17	
16	
15	
14	
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12	
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9	
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7	

Tab. CXV.		Declinatio ad Ori Gra. 57. Lat. 45.												
H. Merid.	Tropic. Capric.				Æquinoctialis.				Tropic. Cancr.				H. Merid.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M		
22	284.	43	793.	40										2
21	289.	50	50	10										3
20	293.	56	23	54										4
19	297.	39	14	15	313	48	76	20						5
18	300.	43	8	48	320	2	28	44						6
17	303.	4	4	50	327	43	16	27	336	57	206	3	7	
16	301.	23	1	52	338	41	10	20	343	51	46	26	8	
15	142.	44	1	5	356	6	6	57	352	50	24	58	9	
14	137.	8	4	6	26	19	5	9	4	44	17	15	10	
13	138.	33	7	39	63	49	5	29	20	12	13	41	11	
12	141.	28	12	30	90	0	7	48	38	34	12	30	12	
11	144.	52	20	30	105	6	11	53	57	11	13	21	13	
10	148.	33	39	1	114	43	19	1	73	11	16	33	14	
9	153.	44	165	24	121	49	35	29	85	35	23	26	15	
8					127	50	139	59	94	57	41	44	16	
7									102	6	155	23	17	

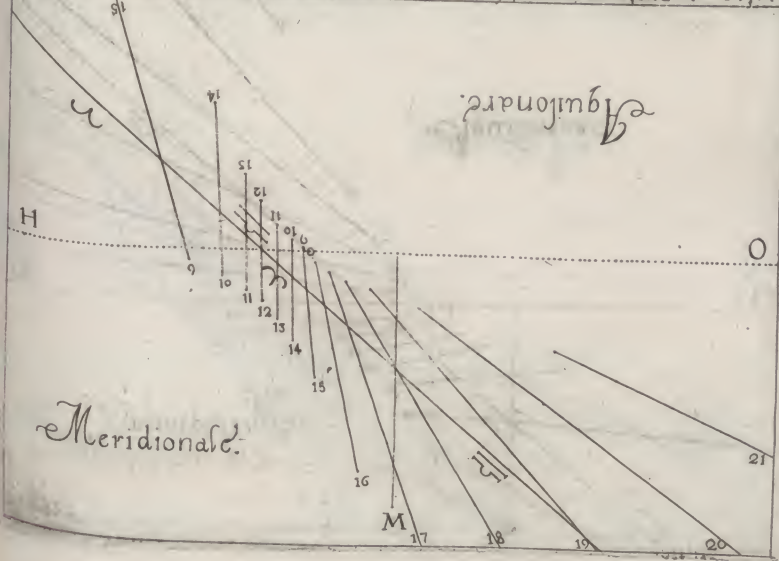


Tab. CXVI		Declinatio ad Occas. Gra. 57 Lat. 45.										H Aquilio		
H Merid.	Tropic. Capric.				Æquinoctialis.				Tropic. Cancr.					
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G	M P	M G	M P	M G	M P	M G	M P	M					
16										20	13	83	52	8
17					46	12	76	20	12	32	33	31	7	
18	72	15	87	48	39	57	28	44	2	23	20	51	6	
19	67	40	31	28	32	17	16	27	34	8	58	13	20	5
20	63	48	17	40	21	19	10	28	33	2	12	54	4	
21	60	35	10	54	3	54	6	57	31	3	9	12	38	3
22	58	0	6	32	33	41	5	9	29	5	23	14	27	2
23	56	48	3	11	29	6	11	5	27	28	1	0	56	1
24	50	0	0	16	27	0	7	48	27	0	0	28	46	24
25	22	9	2	42	25	4	11	53	26	1	42	54	48	23
26	22	14	6	0	24	5	17	19	1					22
27	21	52	10	10	23	8	11	35	29					21
28	21	43	16	24	23	2	10	13	9	59				20
29	21	58	28	30										19
30	20	30	69	53										18
														</



45.	H. Merid.
52.8	22
31.7	21
51.6	20
20.5	19
54.4	18
38.3	17
27.2	16
56.1	15
46.24	14
48.23	13
22	12
21	11
20	10
19	9
18	8
17	7

Tab. cxvii.		Declinatio ad Ort. Gra. 58. Lat. 45.												
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Merid.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M		
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M		
22	284.	34	1213.	12										2
21	289.	46	55	26										3
20	293.	53	24	53										4
19	297.	14	14	43	313.	38	83	27						5
18	299.	59	9	6	319.	42	29	42						6
17	301.	21	5	13	327.	4	16	48	336.	54	280.	31	7	
16	299.	4	2	3	337.	25	10	38	343.	35	46	21	8	
15	154.	31	0	53	354.	22	6	59	352.	22	25	7	9	
14	139.	33	3	51	24	13	5	3	4	3	17	12	10	
13	139.	42	7	21	62	40	5	15	19	23	13	31	11	
12	142.	16	12	14	90	0	7	30	37	49	12	14	12	
11	145.	15	19	45	105	18	11	30	56	42	12	59	13	
10	149.	2	37	0	114	58	18	22	72	58	15	58	14	
9	153.	48	137	10	122	1	33	48	85	33	22	26	15	
8					127.	59	119	53	94	59	38	8	16	
7									102	8	121	39	17	

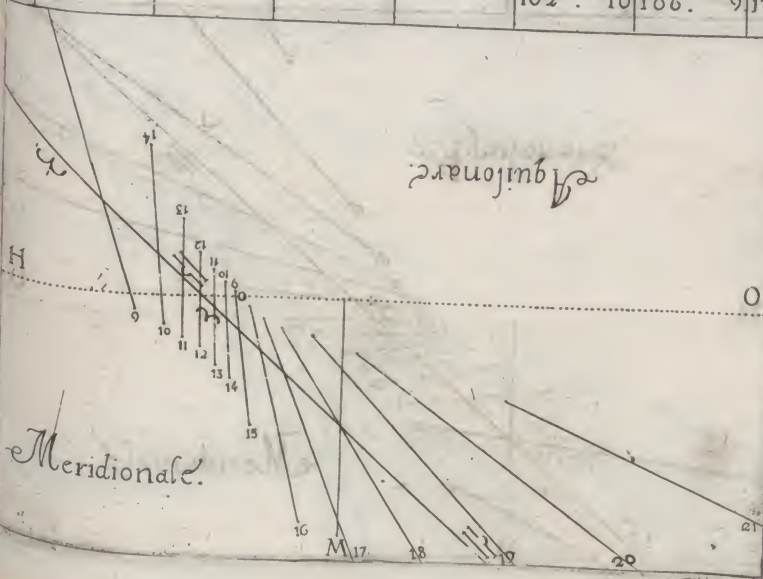


[illegible]

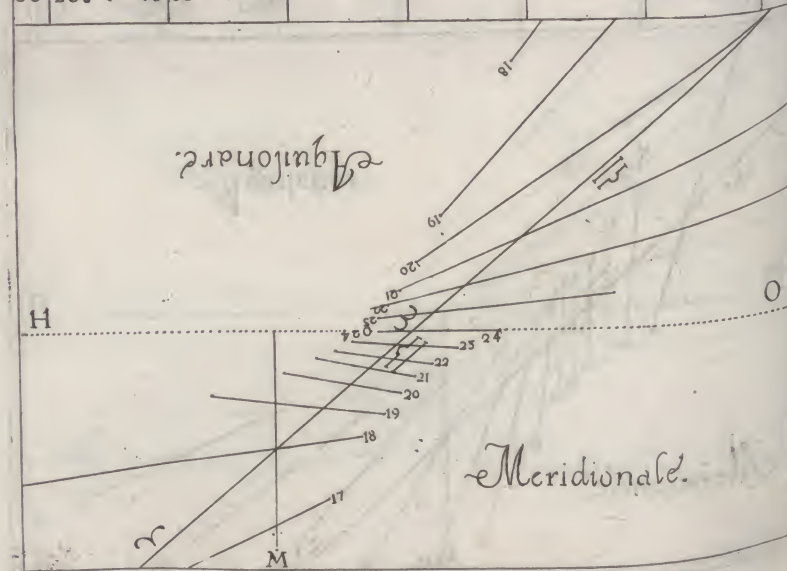
45.	H. Aquil.
ncri.	mbra.
M	
36.8	
57.7	
54.6	
13.5	
42.4	
18.3	
54.2	
2.1	
23.24	
2.23	
22	
21	
Pol. 20	
M 19	
42.18	

Tab. CXVIII. Declinatio ad Ort. Gra. 52. Lat. 45.

H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquil.
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.		
	G	M	P	G	M	P	G	M	P	M
21	289	42	58	48						3
20	293	41	28	56						4
19	296	53	15	11	313	37	91	59		5
18	299	21	9	24	319	24	30	44		6
17	300	32	5	28	326	29	17	10	336	7
16	296	34	2	16	336	24	10	48	343	8
15	164	36	0	53	352	40	7	1	351	9
14	141	24	3	47	22	0	4	57	3	10
13	141	7	7	17	61	43	5	2	18	11
12	142	56	11	58	90	0	7	13	37	12
11	145	50	19	35	105	39	11	7	56	13
10	149	27	36	40	118	17	17	43	72	14
9	153	52	136	15	122	15	32	23	85	15
8					128	3	105	3	95	16
7									102	17
									106	18

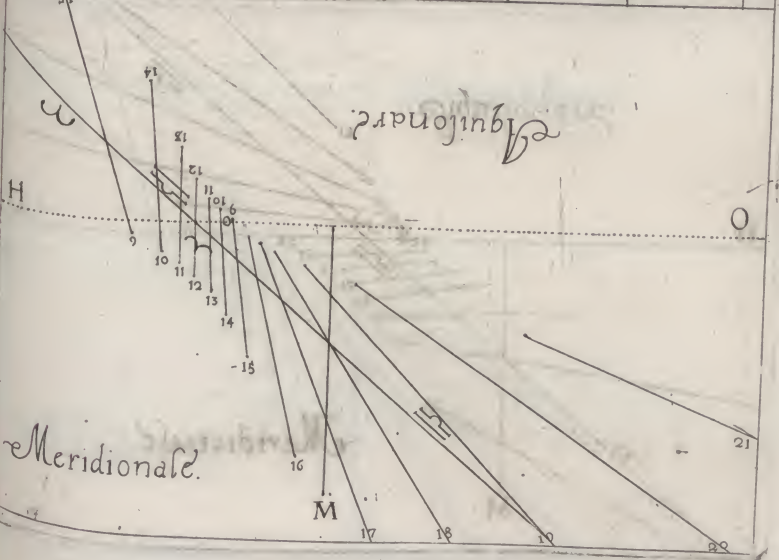


Tab. CXX.		Declinatio ad Occas. Gra. 59. Lat. 45.										H. Merid.	
H. Merid.	Tropie. Capric.				Æquinoctialis.				Tropie. Cancr.				H. Merid.
	Arcus.		Vmbra		Arcus.		Vmbra		Arcus.		Vmbra.		
	G.	M P	M	G	M	P	M	G	M	P	M		
16									20	30	92	21	8
17					46	23	91	59	13	13	34	22	7
18	72	19	117	8	40	36	30	44	3	31	20	57	6
19	67	56	34	49	33	31	17	10	350	31	15	9	5
20	64	23	18	54	23	36	10	48	333	44	12	30	4
21	61	37	11	35	7	20	7	1	314	30	12	1	3
22	59	42	7	1	338	0	4	57	296	10	13	32	2
23	60	22	3	34	298	17	5	2	281	13	17	39	1
24	50	0	0	41	270	0	7	13	270	0	26	9	24
25	215	57	2	27	254	21	11	1	261	38	50	35	23
26	219	3	3	40	244	43	17	42	255	26	1290	15	22
27	217	57	9	43	237	45	32	13					21
28	215	36	15	42	231	57	108	3					20
29	212	14	27	3									19
30	208	10	63	29									18
									</				

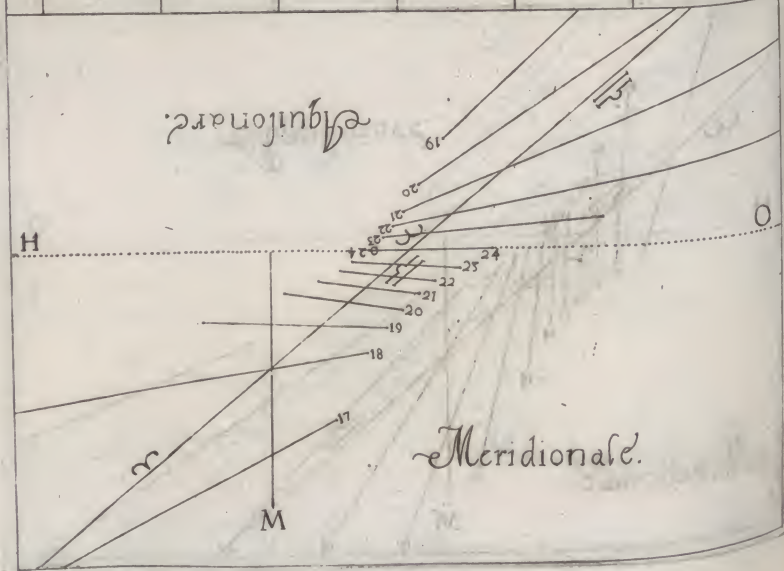


5.	
ancr.	H. Angulo
mbra.	
M	
21	8
22	7
57	6
9	5
30	4
1	3
32	2
39	1
9	24
35	23
15	22
21	21
20	20
Pol	
M	19
44	18

Declinatio ad Ort. Gra. 60. Lat. 45.											
Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.					
Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.	
G.	M.	P.	G.	M.	P.	G.	M.	P.	G.	M.	P.
21	289	37	63	59							
20	293	31	27	5							
19	296	34	15	41	313	27	101	56			
18	298	41	9	42	319	6	31	48			
17	299	26	5	39	325	54	17	30	336	50	412
											28
16	294	18	2	27	335	22	10	56	343	8	48
15	177	44	0	49	350	57	7	3	351	25	25
14	143	43	3	38	19	40	4	52	2	39	17
13	142	24	7	6	60	31	4	49	17	40	13
12	143	48	11	42	90	0	6	56	36	52	11
											43
11	146	19	19	8	105	55	10	44	55	34	12
10	149	41	35	28	114	18	17	8	72	31	14
9	153	57	123	30	122	26	30	51	85	30	20
					128	10	93	29	95	2	33
									102	11	89
											56
											17

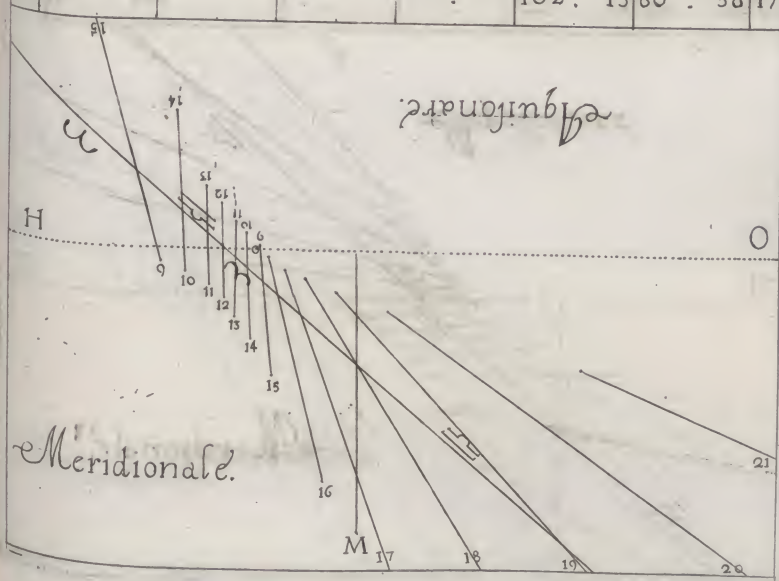


Tab. cxii.		Declinatio ad Occas. Gra. 60. Lat. 45.											
H Merid	Tropic. Capric.				Aequinoctialis.				Tropic. Capric.				H Aquino
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	MP.	MG.	MP.	MG.	MP.	MG.	MP.	G.	MP.	M.		
16									20	39	96	34	8
17					46	33	101	86	13	35	34	51	7
18	72	21	137	44	40	54	31	48	4	8	21	2	6
19	68	4	36	41	34	6	17	30	351	20	15	4	5
20	64	43	19	34	24	38	10	56	334	37	12	19	4
21	61	46	11	57	9	3	7	3	315	15	11	41	3
22	60	31	7	16	340	20	4	52	296	36	13	7	2
23	61	48	3	46	292	29	4	49	281	24	16	53	1
24	90	0	0	54	270	0	6	56	270	0	24	56	24
25	212	14	2	19	254	5	10	44	261	37	46	37	23
26	217	46	5	30	245	42	17	8	253	16	310	5	22
27	216	59	9	30	237	34	30	51					21
28	214	51	15	22	231	50	93	29					20
29	211	52	26	23									19
30	208	1	60	1									18
											Alt. Pol. P. M.	31	48



45.	H. Aquila
cri.	mbra.
M	
34 8	
51 7	
2 6	
4 5	
19 4	
41 3	
7 2	
53 1	
56 24	
37 23	
5 22	
21	
20	
19	
8	
48 18	

Tab. cxxxiii. Declinatio ad Ort. Gra. 61. Lat. 45.											
Tropie. Capric.				Aequinoctialis.				Tropie. Cancr.			
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G.	M	P.	M	G.	M	P.	M	G.	M	P.	M
21	289.	35	70 . 22								
20	293.	20	28 . 15								
19	296.	13	16 . 11	313 .	31	114 .	11				
18	298 .	11	10 . 0	318 .	50	32 .	56				
17	298 .	29	5 . 52	325 .	22	17 .	53	336 .	40	572 .	56
16	292 .	51	2 . 38	334 .	26	11 .	6	342 .	54	49 .	20
15	190 .	18	0 . 52	349 .	20	7 .	5	350 .	57	25 .	35
14	146 .	38	3 . 31	17 .	24	4 .	47	1 .	58	17 .	6
13	143 .	47	6 . 56	59 .	19	4 .	36	16 .	48	13 .	4
12	144 .	36	11 . 29	90 .	0	6 .	39	35 .	25	11 .	29
11	146 .	52	18 . 47	106 .	16	10 .	23	55 .	6	11 .	54
10	150 .	2	34 . 30	115 .	56	16 .	35	72 .	16	14 .	24
9	154 .	3	116 . 7	122 .	39	29 .	33	85 .	26	19 .	53
8				128 .	12	84 .	30	95 .	4	32 .	16
7								102 .	13	80 .	58



45.	
cri.	H. Aquila
ibra.	
M	
8	8
14	7
3	6
58	5
8	4
25	3
43	2
20	1
56	24
49	23
27	22
21	
Pol	
M	
56	18

Tab. CXXV. Declinatio ad Ort. Gra. 62. Lat. 45.

H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquila
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.		
	G.	M.	P.	M.	G.	M.	P.	M.		
21	289	32	77	31						3
20	293	21	29	35						4
19	295	51	16	45	313	29	129	44		5
18	297	39	10	19	318	34	34	6		6
17	297	34	6	6	324	50	18	16	336	7
16	290	41	2	51	333	29	11	17	342	8
15	204	53	0	55	347	38	7	26	350	9
14	149	27	3	23	14	57	4	43	1	10
13	145	12	6	46	57	54	4	24	18	11
12	145	33	11	16	90	0	6	23	34	12
11	147	28	18	23	106	34	10	2	54	13
10	150	17	33	35	116	13	16	3	72	14
9	154	9	106	43	122	53	28	22	85	15
8					128	19	76	56	95	16
7								102	15	17

Aequinoctialis

Meridionalis

M

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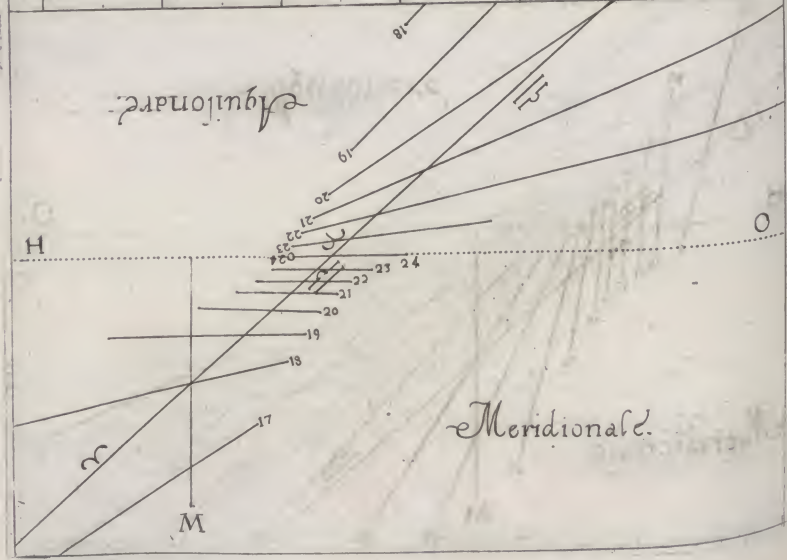
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H

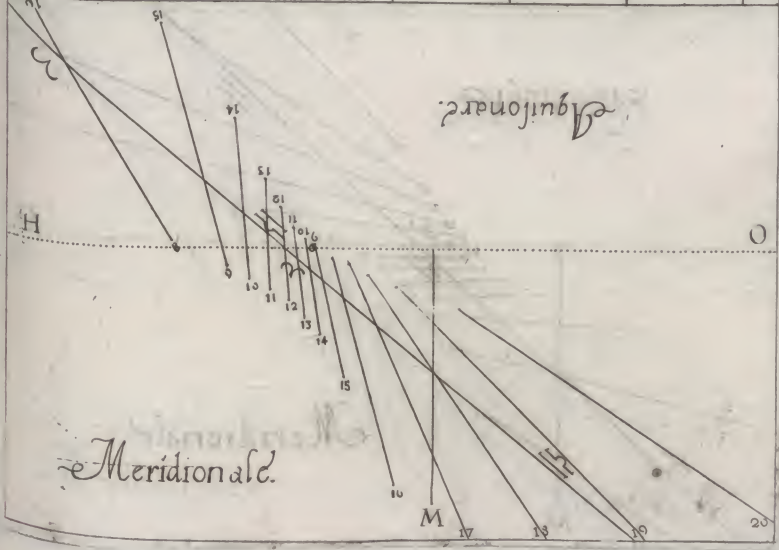
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Tab. CXXVI.		Declinatio ad Occas. Gra. 62. Lat. 45.										H. Aquid.		
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquid.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M	P.	M	G.	M	P.	M	G.	M	P.			M
16										20	51	107	16	8
17					46	31	129	44	14	14	35	48	7	6
18	72	23	220	26	41	26	34	6	5	15	21	8	5	5
19	68	17	41	8	35	10	18	16	352	53	14	55	4	4
20	65	11	21	2	26	31	11	17	336	23	11	57		
21	62	53	12	43	12	22	7	26	316	43	11	9	3	2
22	62	9	7	46	345	3	4	43	297	24	12	20	1	1
23	64	52	4	11	303	6	4	24	281	40	15	45	24	23
24	90	0	1	20	270	0	6	23	270	0	22	52		
25	201	48	2	8	253	26	10	2	261	31	40	49		
26	213	50	5	13	243	47	16	3	255	13	166	45	22	21
27	214	47	9	7	237	7	28	22					20	20
28	213	31	14	46	231	41	76	56					19	18
29	211	3	25	10										
30	207	39	55	49										

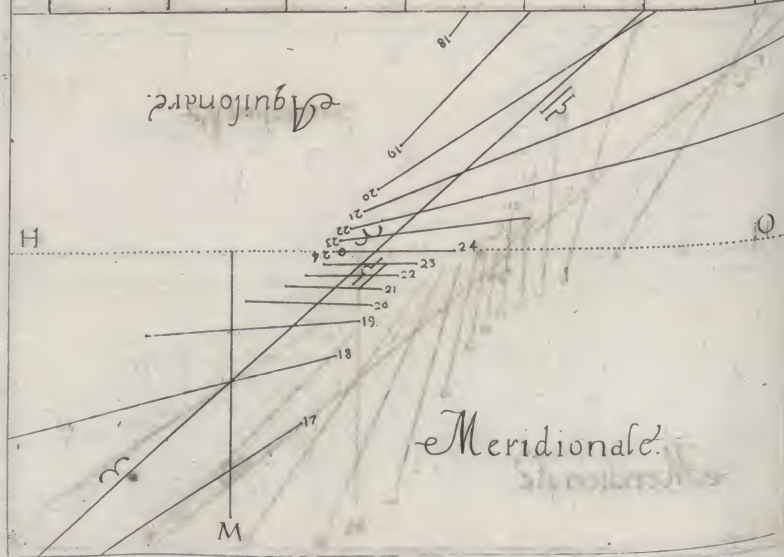


r. 45.	
cri.	H. Aquila
bra.	
M	
16 8	
48 7	
8 6	
55 5	
57 4	
9 3	
20 2	
45 1	
52 24	
49 23	
45 22	
21	
Pol	
M	
19	
6 18	

Tab. CXXVII. Declinatio ad Ort. Grd. 63. Lat. 45.									
Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			
Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.		H. Aquila
G.	M	P.	MG.	M	P.	MG.	M	P.	M
21 289 .	28 88 .	4 .							3
20 293 .	21 31 .	1 .							4
19 295 .	35 17 .	18 313 .	18 149 .	43					5
18 297 .	5 10 .	38 318 .	18 35 .	27					6
17 297 .	39 6 .	19 324 .	18 18 .	42	336 .	47 4137 .	53	7	
16 289 .	44 3 .	3 332 .	32 11 .	27	342 .	26 51 .	42	8	
15 213 .	83 1 .	1 346 .	4 7 .	12	350 .	2 25 .	58	9	
14 152 .	45 3 .	17 12 .	29 4 .	40	0 .	33 17 .	4	10	
13 146 .	37 6 .	37 56 .	22 4 .	12	13 .	1 12 .	49	11	
12 146 .	20 11 .	4 90 .	0 6 .	7	33 .	38 11 .	4	12	
11 148 .	0 18 .	1 106 .	56 9 .	43	53 .	53 11 .	15	13	
10 150 .	38 32 .	47 116 .	34 15 .	34	71 .	44 13 .	29	14	
9 154 .	15 101 .	1 123 .	6 27 .	12	85 .	19 18 .	24	15	
8		128 .	21 66 .	28	95 .	9 29 .	6	16	
7					102 .	16 63 .	17	17	



Tab. CXVIII.		Declinatio ad Occas. Gra. 63. Lat. 45.												H. Aquil.
H. Merid.	Tropic. Capric.				Æquinoctialis.				Tropic. Cancr.					
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M P	M G	M P	M G	M P	M G	M P	M G	M P	M G	M P		
16										20	57	113	14	8
17					46	32	149	42	14	32	36	17	7	7
18	72	25	389	10	41	42	35	27	5	48	21	12	6	6
19	68	24	43	53	35	42	18	42	353	41		50	5	5
20	65	26	21	50	27	28	11	27	337	18		48	4	4
21	63	24	13	6	13	56	7	12	317	30	10	53	3	3
22	62	51	8	2	347	31	4	40	297	52	12	0	2	2
23	65	40	4	23	303	38	4	12	281	50	18	12	1	1
24	90	0	1	32	270	0	6	7	270	0	21	50	24	24
25	197	11	2	3	253	4	9	43	261	29	38	31	23	23
26	211	57	5	5	243	26	15	34	255	13	141	26	22	22
27	213	48	8	55	236	54	27	12					21	21
28	212	50	14	30	231	39	66	28			Alt. Sol.		20	20
29	210	36	24	37							P. M.		19	19
30	207	27	53	52							35	27	18	18



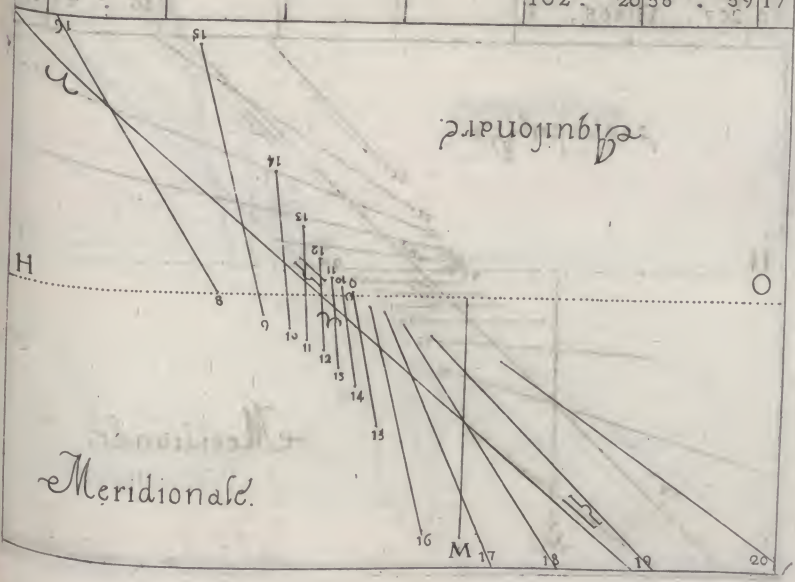
45.

ancr.	H. Aquil.
mbra.	M
14	8
17	7
12	6
50	5
48	4
53	3
0	2
12	1
50	24
31	23
26	22
21	20
Pol.	20
M	19
27	18

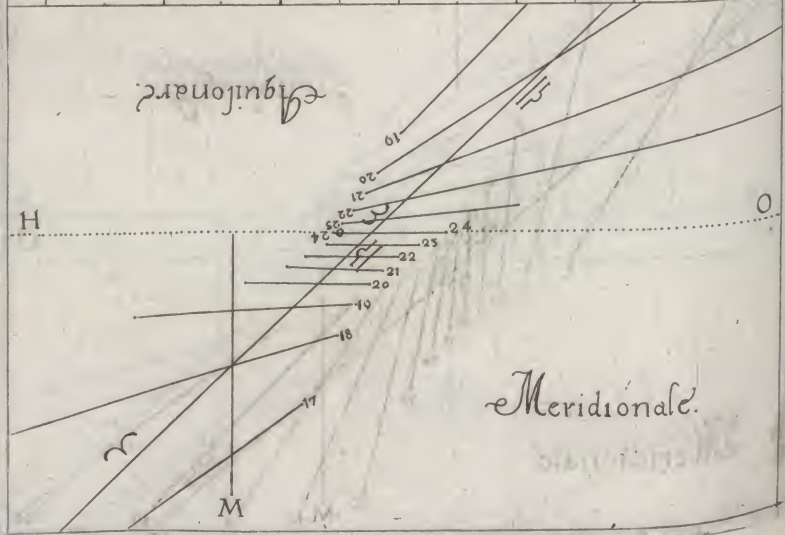
Tab.
CXXVIII.

Declinatio ad Ort. Gra. 63. Lat. 45.

H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
21	289.	26	96	56									3
20	292.	52	32	32									4
19	295.	18	17	54	313.	27	179	6					5
18	296.	33	10	59	318.	2	36	47					6
17	295.	49	6	34	323.	46	19	6	336.	47	6896.	29	7
16	288.	35	3	15	331.	36	11	38	342.	12	52	58	8
15	222.	9	1	9	344.	26	7	17	349.	38	16	1	9
14	155.	53	3	11	9	57	4	37	359.	50	17	4	10
13	148.	9	6	28	54	52	4	1	14.	4	12	43	11
12	147.	20	10	50	90.	0	5	51	32.	43	10	50	12
11	148.	42	17	42	107.	17	9	23	53.	14	10	56	13
10	150.	57	31	54	116.	54	13	3	71.	28	13	2	14
9	154.	22	94	7	123.	22	26	12	85.	17	17	42	15
8					128.	30	65	17	95.	11	27	40	16
7									102.	20	58	59	17

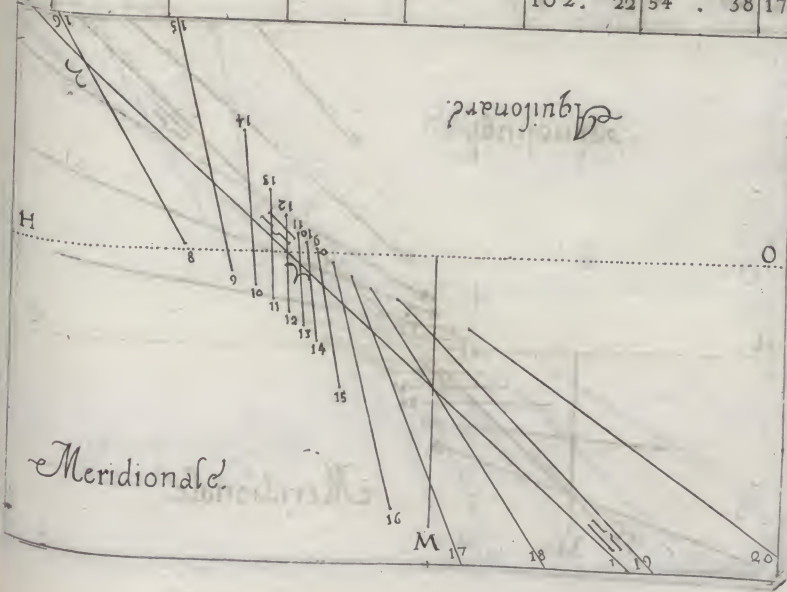


Tab. XXX.		Declinatio ad. Occas. Gra 64 Lat. 45.													
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.					H. Aquil.			
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.							
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M			
16									21		3	120	35	8	
17				46	33	179		6	14		53	36	49	7	
18	72	25	51	46	41	58	36	47	6		22	21	19	6	
19	68	30	46	44	36	14	19		6	354	29	14	47	5	
20	65	38	22	40	28	24	11		38	338	16	11	38	4	
21	63	49	13	32	15	34	7		17	318	14	10	38	3	
22	63	29	8	18	350	3	4		37	298	20	11	35	2	
23	66	57	4	37	305	8	4		1	281	59	14	40	1	
24	90	0	1	45	270	0	5		51	270	0	21	3	24	
25	191	12	2	0	252	43	9		23	261	25	36	9	23	
26	209	58	4	57	243	6	19		3	255	11	113	35	22	
27	212	42	8	45	236	38	26		12					21	
28	212	9	14	13	231	30	65		17					20	
29	210	14	24	3										19	
30	207	15	565	6										18	
												Mr. Pol. P. M.	36	47	19

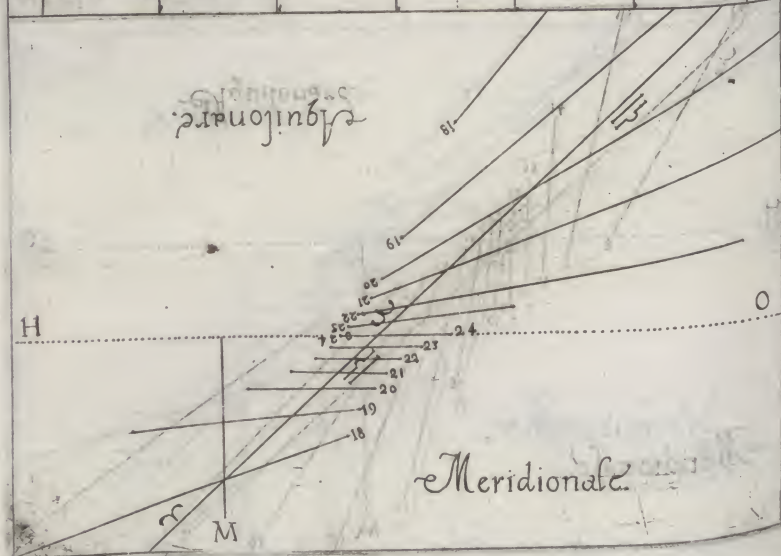


45.	
ncr.	H. Aquil.
mbra.	
M	
35	8
49	7
19	6
47	5
38	4
38	3
33	2
40	1
3	24
9	23
33	22
21	
Pol.	20
M	19
47	18

Tab. CXXXI.		Declinatio ad Ort. Gra. 65. Lat. 45.												
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M P	MG	M P	MG	M P	MG	M P	M					
21	289	23	117	8										
20	292	44	34	16										3
19	295	2	18	34	313	26	254	1						4
18	296	8	11	19	317	50	38	25						5
17	295	3	6	50	323	16	19	34						6
16	287	23	3	29	330	42	11	50	342	0	54	26	8	7
15	229	52	1	18	342	51	7	22	349	8	26	25	9	
14	159	38	5	7	7	25	4	34	359	9	17	4	10	
13	140	49	6	20	52	57	3	40	13	12	12	37	11	
12	148	14	10	37	90	0	5	36	31	46	10	38	12	
11	140	9	17	19	107	41	9	4	52	33	10	38	13	
10	151	17	31	6	117	14	14	34	71	9	12	36	14	
9	154	27	88	56	123	36	25	12	85	13	17	4	15	
8					128	36	60	25	95	14	26	27	16	
7									102	22	54	38	17	

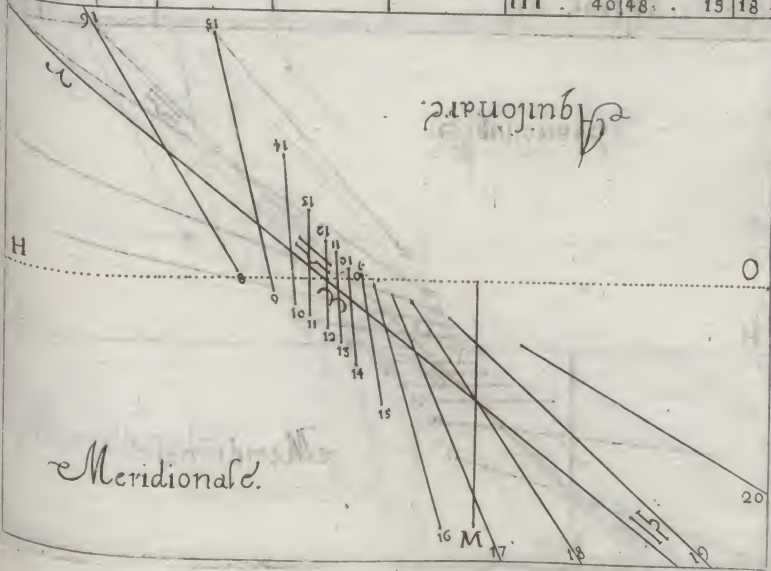


Declinatio ad Occas. Gra 65. Lat. 45.									
H. Merid.	Tropic. Capric.		Aequinoctialis		Tropic. Cancr.		H. Aquilo		
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.			
	G.	M.P.	M.G.	M.P.	M.G.	M.P.	M		
16						21	19	129	20 8
17			46	34	254	1	15	1037	26 7
18	72	27	Infinita	42	1038	25	6	5621	26 6
19	65	34	50	19	36	44	19	355	19 14
20	65	51	23	35	29	18	11	50339	15 11
21	64	11	13	58	17	9	7	22319	13 10
22	64	7	8	35	352	35	4	34298	53 11
23	67	44	4	50	307	3	3	49282	11 14
24	90	0	1	58	270	0	5	36270	0 20
25	185	28	1	58	252	19	9	4261	23 34
26	207	44	4	50	242	46	14	34255	10 99
27	211	26	8	34	236	24	25	712	44 22
28	211	27	13	58	231	24	6	825	21 21
29	209	46	23	31					Alt. Pol. 20
30	207	4	50	3					P. M. 19
									38 25 18

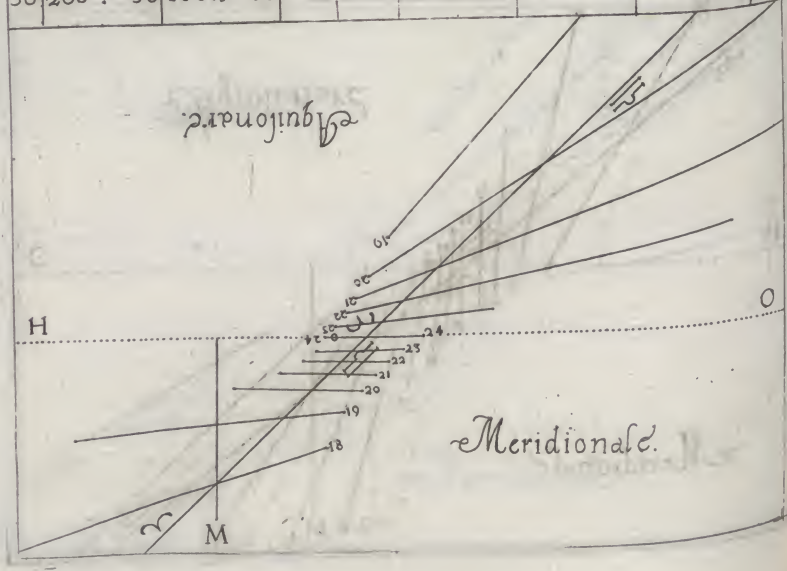


5.	Tri.	H
ra.	Aquino	
M		
20	8	
26	7	
26	6	
44	5	
30	4	
23	3	
14	2	
10	1	
15	24	
16	23	
44	22	
21		
Pol	20	
M	19	
25	18	

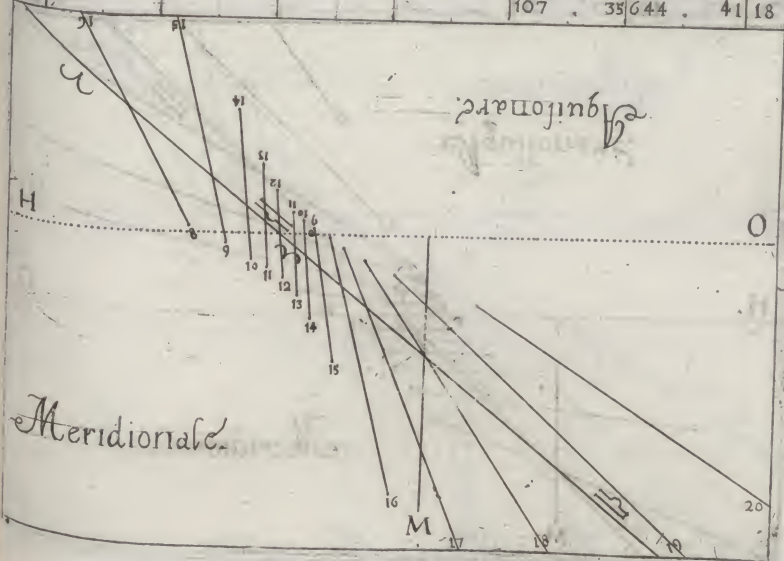
Tab. CXXXIII		Declinatio ad Ort. Gra. 66 Lat. 45.									
H	M	Tropie. Capric.			Equinoctialis.			Tropie. Cancr.			H
		Arcus.		Vmbra	Arcus.		Vmbra	Arcus.		Vmbra	
G	M	P	MG	M	P	MG	M	P	MG	M	Aquino
21	289	23	134	54							3
20	292	36	36	4							4
19	294	46	19	41	313	13	292	26			5
18	295	39	11	41	317	37	40	0			6
17	294	17	7	5	322	48	20				7
16	286	12	3	42	329	51	12	3	341	47	55
15	235	50	1	28	341	18	7	28	348	42	26
14	163	14	3	2	4	43	4	33	358	26	17
13	151	27	6	12	50	56	3	39	12	16	12
12	149	15	10	26	90	0	5	21	30	47	10
11	149	46	16	59	108	4	8	46	51	51	10
10	151	37	30	19	117	38	14	7	70	49	12
9	154	36	83	48	123	54	24	18	85	8	16
8					128	45	56	27	95	15	25
7									102	25	40
									111	40	48



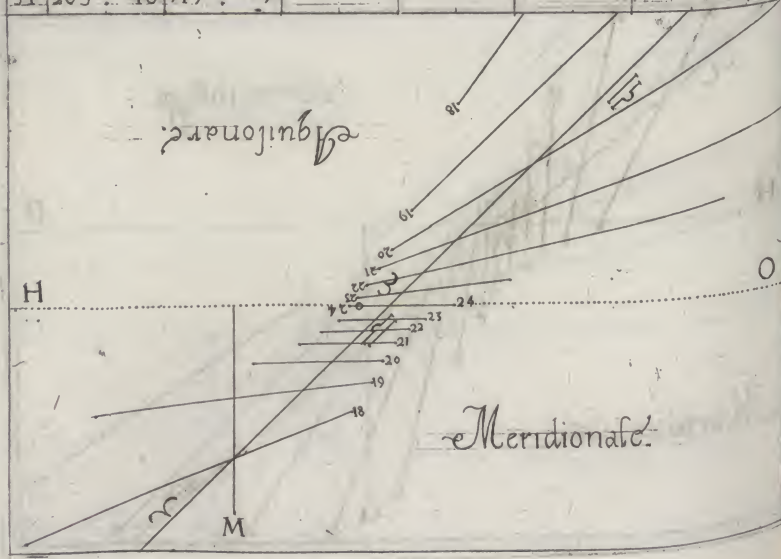
Declinatio ad Occas. Gra. 66. Lat. 45.											
Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.			
Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
G.	M	P.	M	G.	M	P.	M	G.	M	P.	M
16				46	47	292	26	15	29	38	4
17				42	23	40	0	7	29	21	32
18				37	12	20	1	356	6	14	43
19	203	12	982	43	37	12	20	1	356	6	14
20	66	2	24	32	30	1	9	12	3	340	13
21	64	33	14	26	18	42	7	28	320	6	10
22	63	44	8	53	355	17	4	33	299	24	10
23	68	42	5	4	309	4	3	39	282	21	13
24	90	0	2	11	270	0	5	21	270	0	19
25	179	8	1	58	251	56	8	46	261	20	32
26	203	29	4	43	242	22	14	7	253	8	85
27	210	12	8	28	236	6	24	18			
28	210	37	13	42	231	15	56	27			
29	209	2	23	1							
30	206	50	1006	38							



Declinatio ad Ort. Gra. 67. Lat. 45.													H. Aquil.
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				
	Arcus		Vmbra		Arcus		Vmbra		Arcus		Vmbra		
	G	M	P	MG	M	P	MG	M	P	M			
21	289	20	176	21									3
20	292	27	38	11									4
19	294	30	19	53	313	28	420	53					5
18	295	13	12	3	317	22	41	43					6
17	293	36	7	20	322	21	20	30					7
16	285	29	3	55	329	0	12	16	341	36	57	24	8
15	239	26	1	40	339	49	7	33	348	13	26	55	9
14	167	12	3	0	2	6	4	32	357	44	17	7	10
13	151	26	6	5	48	42	3	28	11	19	12	26	11
12	150	15	10	15	20	0	5	6	29	47	10	15	12
11	150	22	16	41	108	39	8	27	51	6	10	3	13
10	152	0	29	37	118	2	13	33	70	29	11	42	14
9	154	45	79	52	124	11	23	27	85	5	18	52	15
8					128	54	52	58	95	18	24	11	16
7									102	28	46	55	17
6									107	35	644	41	18

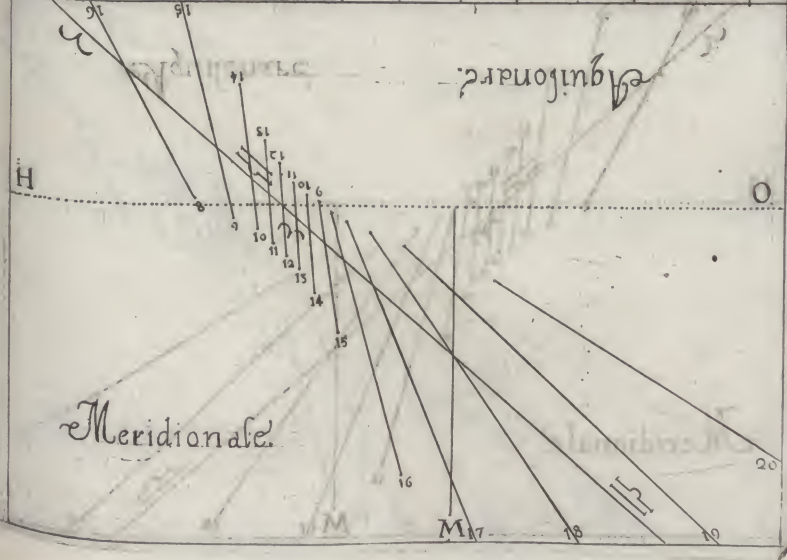


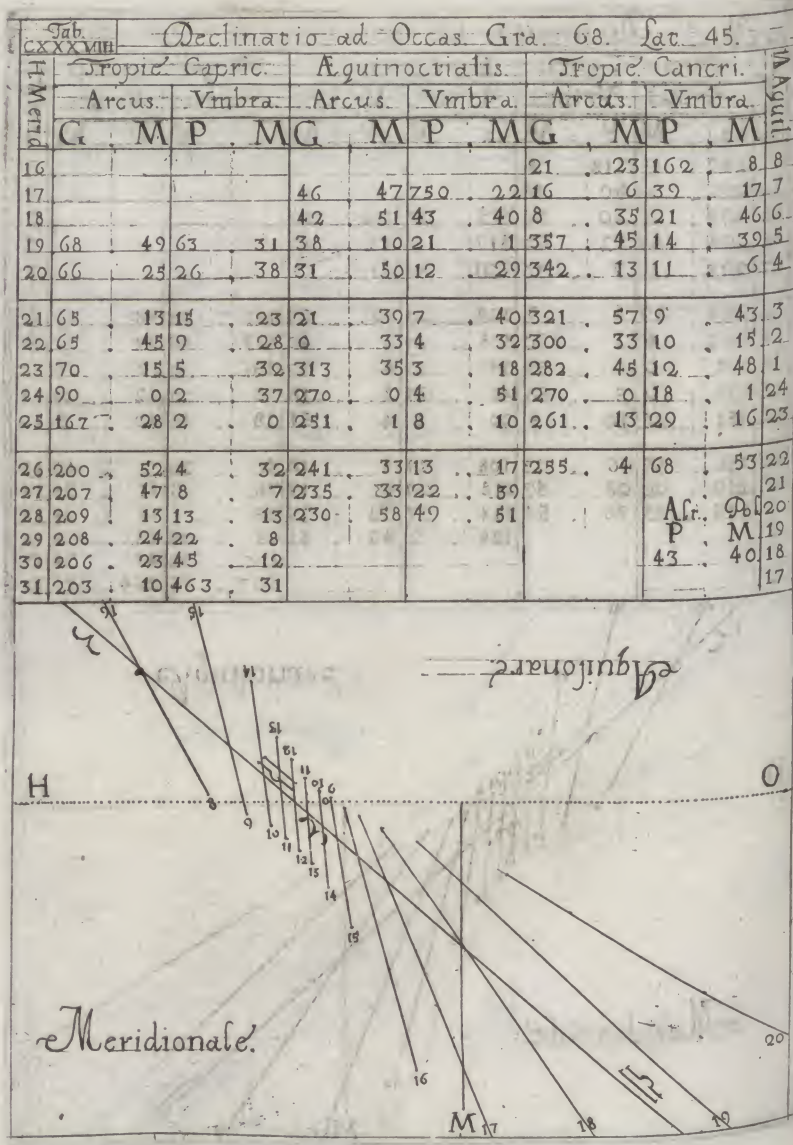
Tab. Declinatio ad Occas. Gra. 67. Lat. 45.													
H. Merid.	Tropic. Capric.		Aequinoctialis				Tropic. Canceri		H. Aquila				
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.							
	G.	M. P.	M. G.	M.	P.	M. G.	M. P.	M.					
16							21	17	150	15	8		
17			46	42	420	53	15	46	38	40	7		
18			42	38	41	45	8	2	21	38	6		
19	68	45	58	45	37	39	20	31	356	55	14	41	5
20	66	15	25	34	31	0	12	16	341	16	11	13	4
21	64	54	14	54	20	11	7	33	321	0	9	56	3
22	65	15	9	10	357	54	4	32	399	56	10	36	2
23	69	28	5	18	311	18	3	28	282	32	13	15	1
24	90	0	2	25	270	0	5	6	270	0	18	44	24
25	133	20	1	58	251	25	8	27	261	16	30	49	25
26	203	12	4	32	241	58	13	33	255	6	77	54	22
27	209	0	8	16	235	49	23	27					21
28	209	56	13	28	231	6	52	58					20
29	208	51	22	35									19
30	206	35	46	47									18
31	203	10	719	9									17



Tab. CXXXVII. Declinatio ad Orr. Gra. 68. Lat. 45.

H. Merid.	Tropic. Capric.				Equinoctialis				Tropic. Cancr.				H. Aquilo
	Arcus		Vmbra		Arcus		Vmbra		Arcus		Vmbra		
	G	M P	M	G	M P	M	G	M P	M	G	M P	M	
21	289.	19	218	4									3
20	292.	20	40	18									4
19	294.	16	20	36	313.	13	750	22					5
18	294.	47	12	27	317.	9	43	40					6
17	293.	2	7	36	321.	50	21	1					7
16	284.	39	4	9	328.	10	12	29	341.	23	58	59	8
15	243.	4	1	50	338.	21	7	40	347.	49	27	11	9
14	171.	0	2	55	359.	27	4	32	357.	2	17	18	10
13	155.	0	5	58	46	25	3	18	10.	23	12	21	11
12	151.	16	10	55	90	0	4	15	28	46	10	5	12
11	150.	59	16	23	108.	59	8	10	50	22	9	47	13
10	152.	20	28	57	118.	27	13	17	70.	9	11	25	14
9	154.	53	75	54	124.	27	22	39	85.	1	15	18	15
8					129.	2	49	51	95.	22	23	7	16
7									102.	32	43	34	17
6									107.	36	264.	17	18





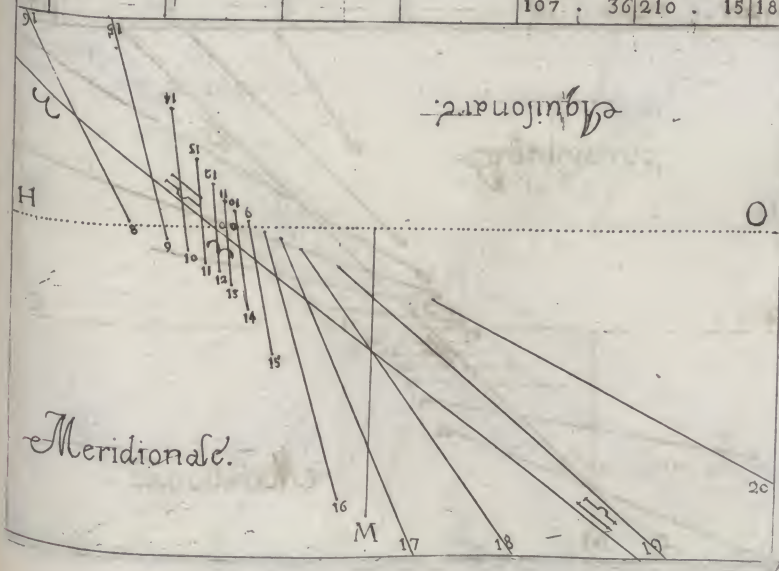
45.

cri.	M. Aquil.
8.8	
17.7	
46.6	
39.5	
6.4	
43.3	
15.2	
48.1	
1.24	
16.23	
53.22	
21	
20	
19	
18	
17	

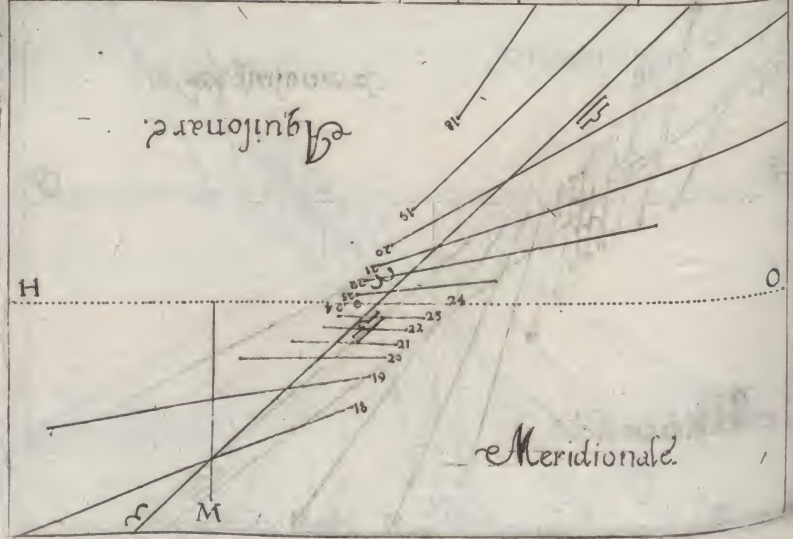
Tab.
xxxix.

Declinatio ad Ort. Gra. 69. Lat. 45.

H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancer.			H. Aquilo.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M	P	MG	M	P	MG	M	P		M		
21	289	17	361	48							3		
20	292	14	43	0							4		
19	294	1	21	24	313	22	3761	43			5		
18	294	24	12	15	316	58	43	48			6		
17	292	23	7	52	321	26	21	33			7		
16	283	59	4	49	327	22	12	43	341	12	60	48	8
15	245	36	2	2	336	54	7	47	347	23	27	28	9
14	175	11	2	55	356	48	4	32	356	21	17	10	10
13	156	52	5	51	43	39	3	9	9	24	12	17	11
12	152	19	9	55	90	0	4	30	27	43	9	55	12
11	151	38	16	6	109	32	7	52	49	32	9	31	13
10	152	42	28	17	118	52	12	53	69	46	11	5	14
9	155	2	72	30	124	46	21	53	84	57	14	46	15
8					129	14	47	5	95	24	22	12	16
7									102	35	41	1	17
6									107	36	210	15	18

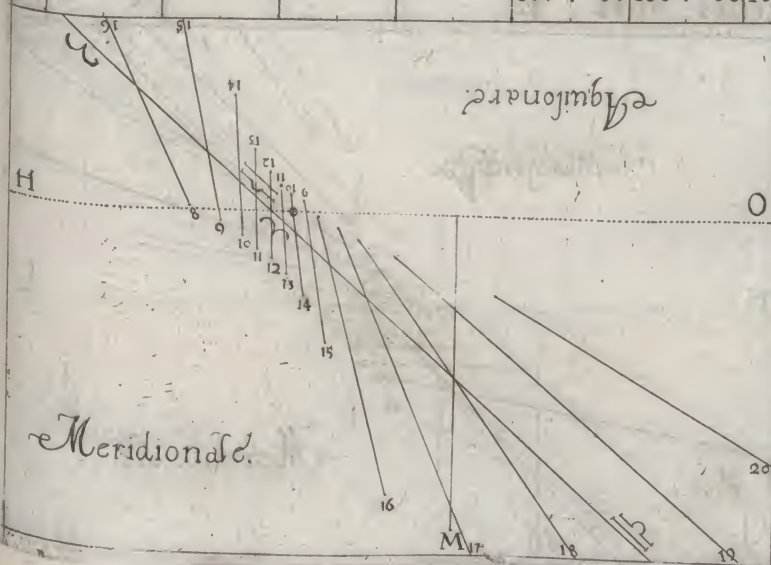


Tab cxxxxx.		Declinatio ad Occas. Gra 69. Lat. 45.											
H Merid	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H Aquila
	Arcus.		Vmbra		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G	M P	M G		M	P	M G		M	P	M		
16									21	27	177	34	8
17					46	38	4137.	53	16	23	40	0	7
18					43	4	45	48	9	8	21	54	6
19	68	53	368	14	38	34	21	34	358	34	14	38	5
20	66	36	27	50	32	40	12	43	343	16	10	59	4
21	65	32	15	54	23	7	7	46	322	57	9	30	3
22	66	22	9	48	7	13	4	33	300	48	9	38	2
23	71	51	5	47	316	47	3	8	282	58	12	21	1
24	90	0	2	51	270	0	4	36	270	0	17	20	24
25	161	37	2	4	250	29	7	52	261	8	27	50	23
26	198	13	4	27	241	3	11	52	233	0	62	29	22
27	206	28	7	53	233	8	21	52					21
28	208	21	13	0	230	50	47	1					20
29	208	2	21	38									19
30	206	9	43	49									18
31	203	9	368	14							45	48	17

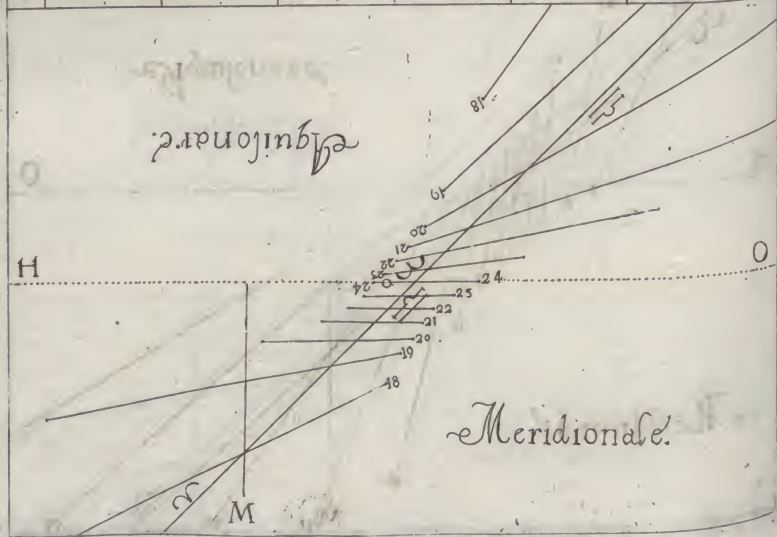


Tab. cxxxxxi. Declinatio ad Ort. Gra. 70. Lat. 45.

H. Merid.	Tropie. Capric.		Æquinoctialis.		Tropie. Cancr.		H. Aquilo
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G	M P	MG	M P	MG	M P	M
20	292 .	9 45 .	43				4
19	293 .	48 22 .	13				5
18	293 .	55 13 .	18	316 .	46 48 .	5	6
17	291 .	50 8 .	12	320 .	58 22 .	5	7
16	285 .	23 4 .	36	326 .	35 12 .	58 341 .	1 62 . 23 8
15	248 .	6 2 .	14	335 .	29 7 .	54 346 .	55 27 . 37 9
14	179 .	20 2 .	54	354 .	15 4 .	33 355 .	39 17 . 12 10
13	158 .	43 5 .	45	40 .	57 3 .	6 8 .	29 12 . 13 11
12	154 .	24 9 .	45	90 .	0 4 .	22 26 .	40 9 . 45 12
11	152 .	16 15 .	40	110 .	2 7 .	36 48 .	46 9 . 18 13
10	153 .	5 27 .	40	119 .	20 12 .	30 69 .	26 10 . 45 14
9	155 .	9 69 .	20	125 .	5 21 .	12 84 .	54 14 . 15 15
8				129 .	23 44 .	31 95 .	28 21 . 20 16
7				133 .	13	Infinita.	102 . 40 38 . 39 17
6						107 .	39 153 . 38 18



Tab. CXXXXII		Declinatio ad Occas. Gra. 70. Lat. 45.										H Aquil.	
H Merid.	Tropic. Capric.				Aequinoctialis				Tropic. Cancr.				H Merid.
	Arcus	Vmbra.	Arcus	Vmbra.	Arcus	Vmbra.	Arcus	Vmbra.	Arcus	Vmbra.	Arcus	Vmbra.	
	G	M	P	MG	M	P	MG	M	P	M			
16									21	30	195	1	8
17									16	40	40	49	7
18					43	14	48	5	10	3	21	36	6
19	68	58	77	3	39	2	22	7	359	23	14	38	5
20	66	45	29	3	33	25	12	58	344	20	10	53	4
21	63	39	16	9	24	31	7	54	323	59	9	18	3
22	60	47	10	6	5	45	4	33	301	46	9	39	2
23	71	38	6	1	314	3	3	0	383	10	11	57	1
24	90	0	3	4	270	0	4	22	269	53	16	41	24
25	156	24	2	9	249	58	7	36	261	4	26	35	23
26	195	45	4	23	240	40	12	30	255	2	57	25	22
27	205	1	7	53	234	55	21	11					21
28	207	32	12	49	230	37	44	31					20
29	207	27	21	19									19
30	205	57	42	32									18

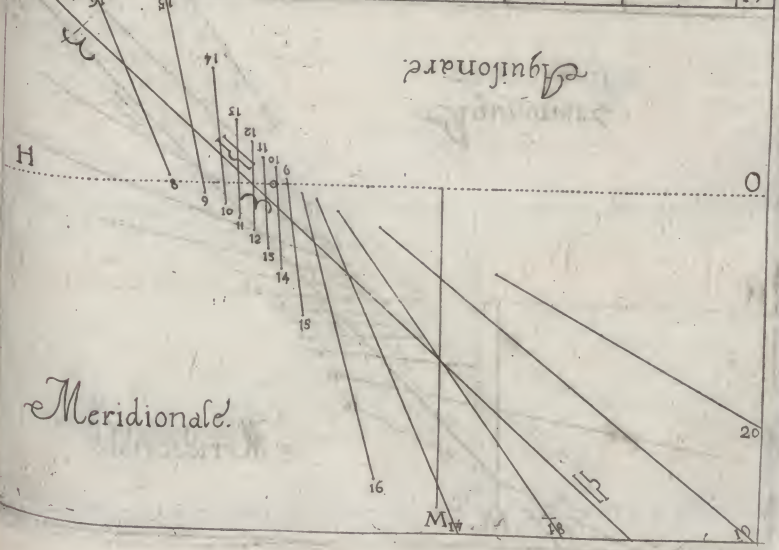


43.
cri. H. Aquil.
bra. M
1 8
49 7
36 6
38 5
53 4

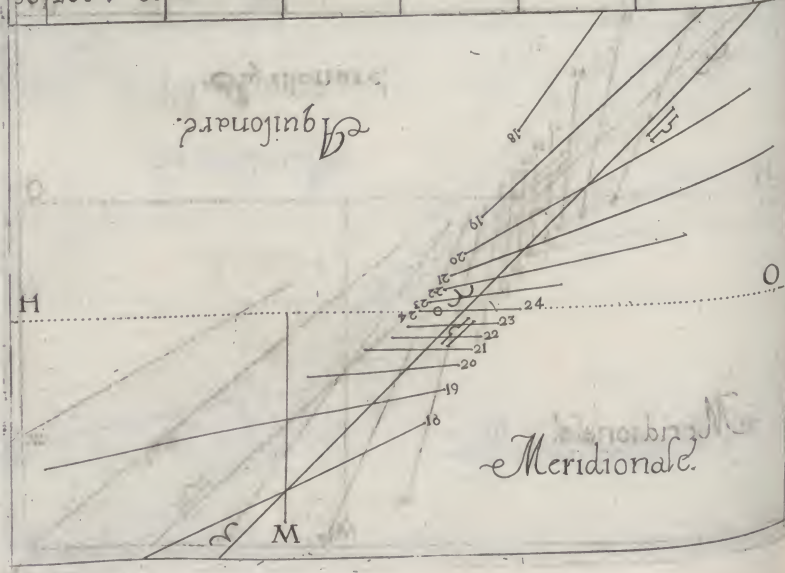
18 3
39 2
57 1
41 24
33 23

25 22
21
Pol. 20
M 19
5 18

Tab CXXXIII		Declinatio ad Ort. Gra. 71. Lat. 45.												
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M.	P.	M.	G.	M.	P.	M.	G.	M.	P.	M.		
20	292	3	49	8										4
19	293	33	23	7										5
18	293	40	13	42	316	36	51	83						6
17	291	19	8	26	320	35	23	0						7
16	282	49	4	50	323	45	13	21	340	50	64	39	8	
15	249	47	2	26	334	10	8	2	346	33	28	4	9	
14	183	25	2	34	351	34	4	38	354	57	17	16	10	
13	160	44	5	40	37	32	2	51	7	27	12	9	11	
12	154	44	9	36	90	0	4	8	25	30	9	36	12	
11	152	59	13	34	110	34	7	19	47	49	9	2	13	
10	153	29	27	5	119	50	12	70	68	58	10	20	14	
9	155	21	66	25	125	24	20	14	84	48	13	46	15	
8					129	36	41	24	95	31	20	28	16	
7					133	13	438	45	102	44	36	19	17	
6									107	38	130	36	18	
5													19	

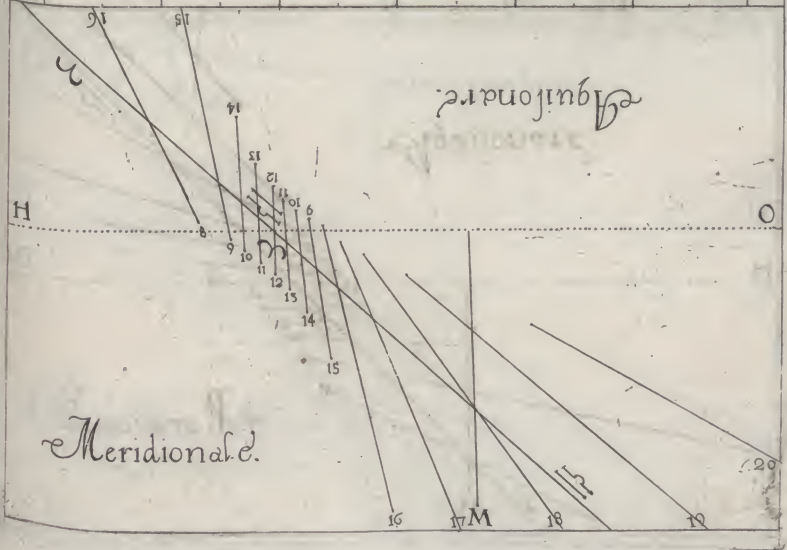


Tab. CXXXXIV		Declinatio ad Occas. Gra. 71. Lat. 45.												H. Merid.
H. Merid.	Tropie Capric.				Aequinoctialis.				Tropie Cancr.				H. Merid.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M/P.	M.	G.	M/P.	M.	G.	M/P.	M.	G.	M/P.	M.		
16										21	33	222	48	8
17										16	56	41	29	7
18					43	24	51	55	10	12	22	13	6	
19	69	0	87	54	39	25	23	0	0	12	14	38	5	
20	66	55	30	32	34	18	13	21	348	24	10	47	4	
21	66	9	17	0	25	50	8	2	325	3	9	6	3	
22	67	13	10	27	8	26	4	35	302	27	9	22	2	
23	72	9	6	16	322	28	2	51	383	25	11	33	1	
24	90	0	3	17	270	0	4	8	270	0	16	7	24	
25	151	33	2	15	249	26	7	19	260	0	25	27	23	
26	193	0	4	19	240	10	12	7	254	56	53	10	22	
27	203	39	7	44	234	36	20	14						
28	206	46	12	36	230	24	41	24						
29	206	57	20	55										
30	205	36	41	23										
												Alt. Pol.		
												P. M.		
												51	55	18

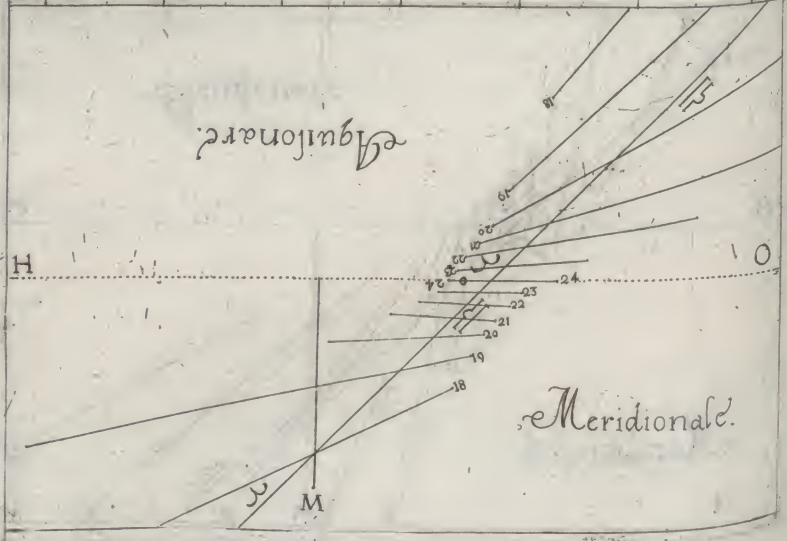


45.	
Cri.	H Aquil
bra.	
M	
48.8	
29.7	
13.6	
38.5	
47.4	
6.3	
22.2	
33.1	
7.24	
27.23	
10.22	
21	
Do.	
20	
M.	
19	
55.18	

Tab. Declinatio ad Ort. Gra. 72. Lat. 45.											
H Merid	Tropic Capric.			Aequinoctialis.			Tropic Cancr.			H Aquil	
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.			
	G.	M	P.	M	G.	M	P.	M	G.	M	P.
20	291	58	52	36							4
19	293	23	24	2							5
18	293	19	14	9	316	27	53	37			6
17	290	46	8	45	320	11	23	21			7
16	282	13	5	5	325	1	13	29	340	40	66
15	251	28	2	39	332	49	8	10	346	8	28
14	189	37	2	55	349	1	4	38	354	16	17
13	162	43	5	35	34	11	2	43	6	29	12
12	155	40	9	27	90	0	3	54	24	21	9
11	153	39	15	18	111	8	7	3	47	1	8
10	153	54	26	32	120	19	11	41	68	33	10
9	155	30	63	37	125	45	19	49	84	43	13
8					129	36	40	10	95	35	19
7					133	14	340	48	102	49	34
6									107	42	106

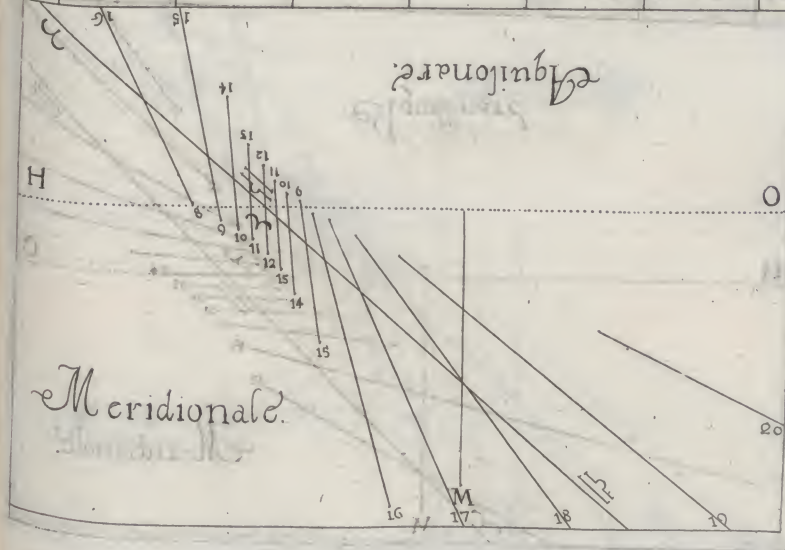


Tab. CXXXXVI		Declinatio ad Occas Gra. 72. Lat. 45.											
H. Merid.	Tropic. Capric.			Aequinoctialis			Tropic. Cancr.			H. Aquil.			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M	P	M	G	M	P	M	G		M	P	M
17								17	12	42	22	7	
18				43	33	53	37	10	43	22	24	6	
19	69	3	28	41	39	49	23	21	1	14	38	5	
20	67	4	31	59	34	59	13	29	346	29	10	42	4
21	66	26	17	35	27	11	8	10	326	8	8	55	3
22	67	41	10	48	10	59	4	38	303	9	9	5	2
23	72	45	6	31	325	49	2	43	283	39	11	9	1
24	90	0	3	31	270	0	3	54	270	0	15	29	24
25	146	50	2	21	248	52	7	3	260	55	24	18	23
26	190	17	4	16	239	41	11	41	254	49	48	59	22
27	202	13	7	36	234	13	19	49					21
28	205	52	12	23	230	19	40	10					20
29	206	20	20	31	226	43	340	48					19
30	205	22	40	12									18
31	203	1	225	15									17

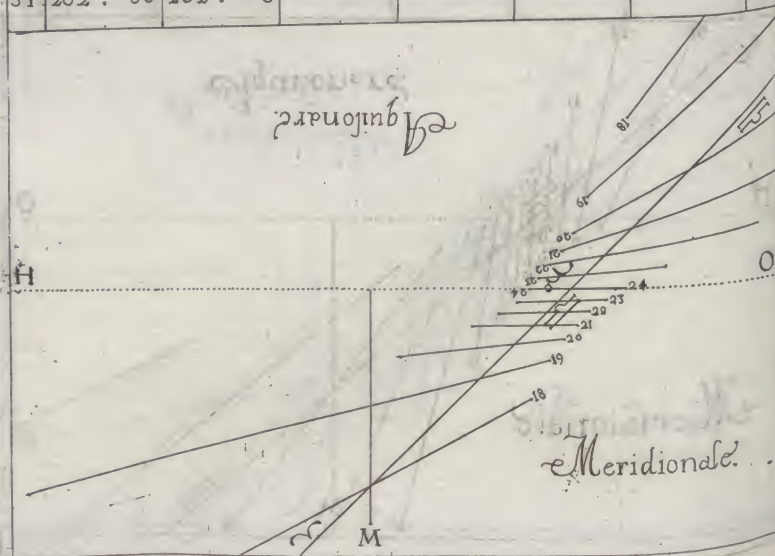


45.	H. Aquil.
cri	bra.
M	
22 7	
24 6	
38 5	
42 4	
55 3	
5 2	
9 1	
29 24	
18 23	
59 22	
21	
20	
19	
18	
37 17	

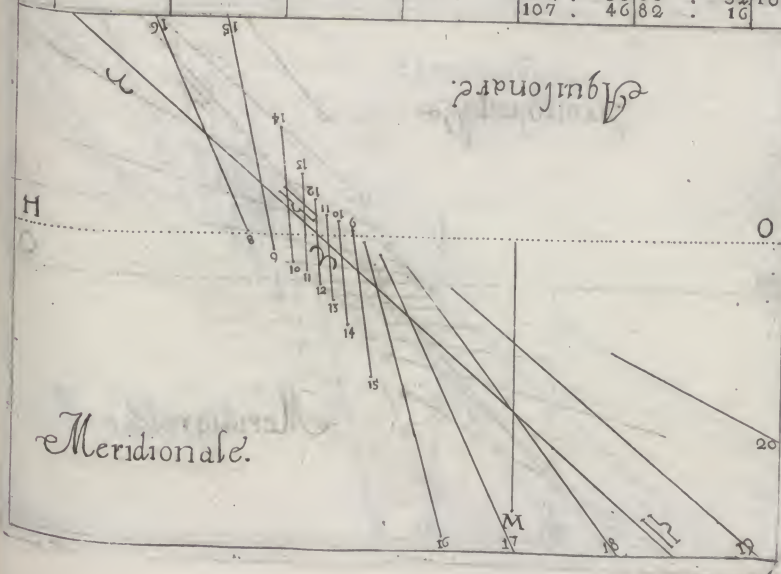
Tab cxxxxvii		Declinatio ad Ort. Gra. 73. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Merid.
	Arcus:		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.				
20	291.	53	57	10									4
19	293.	10	25	3									5
18	293.	0	14	37	316.	17	56	32					6
17	290.	22	9	2	319.	48	23	57					7
16	281.	50	5	19	324.	21	13	45	340.	30	69	4	8
15	252.	43	2	51	331.	29	8	18	345.	44	28	43	9
14	191.	34	2	57	346.	29	4	41	353.	34	17	24	10
13	164.	47	5	33	30	13	2	36	5	29	12	3	11
12	156.	51	9	18	90	0	3	40	23	10	9	18	12
11	154.	24	13	5	111.	48	6	48	45	57	8	35	13
10	154.	18	26	0	120	55	11	24	68	6	9	41	14
9	155.	41	61	18	126.	5	19	14	84	38	12	50	15
8					129.	37	38	25	95	38	18	55	16
7					133.	15	256.	4	102.	53	32	28	17
6									107.	43	94	32	18



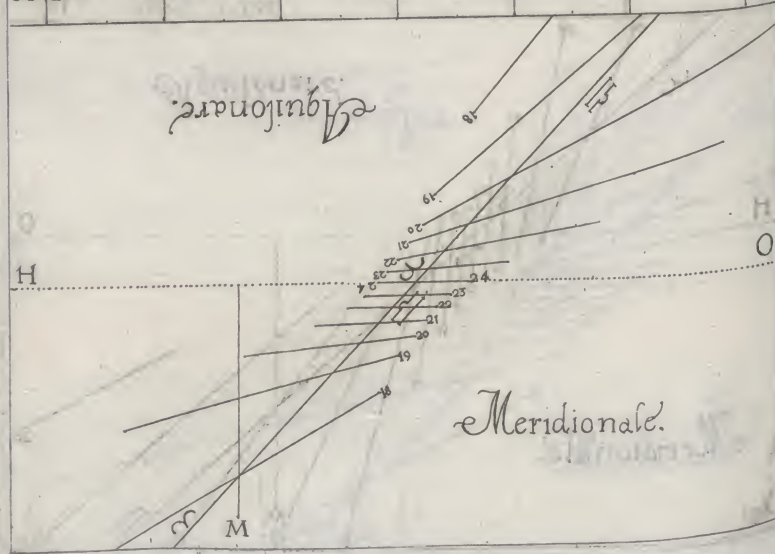
Tab. XXXVIII		Declinatio ad Occas. Gra. 73. Lat. 45.										H. Aequid.	
H. Merid.	Tropic. Capric.		Aequinoctialis.				Tropic. Cancr.		H. Aequid.				
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.							
	G.	M. P.	M. G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.				
17					17		28	43		14	7		
18			43	43	56	32	11	18	22		34	6	
19	69	5	117	8	40	12	23	57	1	50	14	39	5
20	67	13	33	41	35	39	13	45	347	55	10	36	4
21	66	42	18	13	28	31	8	18	327	17	8	45	3
22	68	4	11	10	13	31	4	41	303	53	8	48	2
23	73	17	6	47	329	47	2	36	283	55	10	46	1
24	90	0	3	44	270	0	3	40	270	0	15	0	24
25	143	0	2	28	248	12	6	48	260	50	23	19	23
26	187	30	4	14	239	5	11	24	254	46	45	51	22
27	200	45	7	30	233	55	19	14					21
28	204	55	12	13	230	23	38	25					20
29	205	52	20	10	226	48	256	4					19
30	205	3	39	13									18
31	202	58	202	0									17



Tab. xxxxix.		Declinatio ad Ort. Gra. 74. Lat. 45.									
cri. bra.	H. Aquilo	H. Merid.	Tropic. Capric.		Aequinoctialis.			Tropic. Cancr.		H. Aquilo	
			Arcus	Vmbra	Arcus	Vmbra	Arcus	Vmbra			
M			G	M P	MG	M P	MG	M P	M		
14 7		20	291 .	48 61 .	44					4	
34 6		19	293 .	1 26 .	4					5	
39 5		18	292 .	40 15 .	7 316 .	6 60 .	20			6	
36 4		17	289 .	50 9 .	22 319 .	26 24 .	42			7	
48 3										8	
48 2		16	281 .	19 5 .	34 323 .	41 14 .	3 340 .	20 71 .	27 9		
46 1		15	283 .	52 3 .	4 330 .	23 8 .	27 345 .	2 29 .	5 10		
0 24		14	195 .	31 3 .	0 344 .	1 4 .	45 352 .	54 17 .	29 11		
19 23		13	166 .	57 5 .	28 26 .	16 2 .	30 4 .	30 12 .	1 12		
51 22		12	154 .	4 9 .	12 90 .	9 3 .	26 22 .	0 9 .	11 13		
21		11	155 .	5 14 .	51 112 .	28 6 .	33 45 .	0 8 .	19 14		
20		10	154 .	43 25 .	30 121 .	24 11 .	4 67 .	39 9 .	22 15		
Pol 19		9	155 .	53 59 .	20 126 .	28 18 .	37 84 .	33 12 .	23 16		
M 18		8			130 .	8 36 .	34 95 .	45 18 .	9 17		
32 17		7			133 .	5 198 .	7 102 .	58 30 .	52 18		
		6					107 .	46 82 .	16		

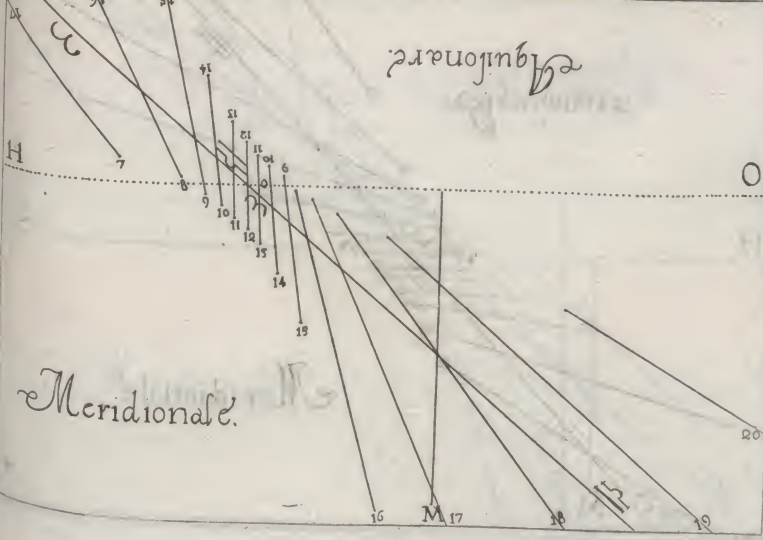


Tab. CL		Declinatio ad Occas. Gra 74. Lat. 45.										H Aguilo	
H. Mend.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M/P	MG	M/P	MG	M/P	MG	M/P	MG	M/P	M		
17									17	45	44	4	7
18					43	54	60	20	11	46	22	46	6
19	69	7	135	21	40	34	24	42	2	40	14	40	5
20	67	23	35	25	36	21	4	3	348	41	10	32	4
21	66	58	18	52	29	47	8	27	328	26	8	35	3
22	68	30	11	31	15	59	4	45	304	39	8	33	2
23	73	49	7	3	333	43	2	30	348	12	10	26	1
24	90	0	3	59	270	0	3	26	270	0	14	28	4
25	139	13	2	37	247	32	6	33	260	45	22	20	23
26	184	38	4	13	236	36	11	4	254	42	42	44	22
27	199	11	7	24	233	32	18	37	250	42	278	37	21
28	204	12	12	1	229	52	36	34					20
29	205	20	19	50	226	55	198	37					19
30	204	47	38	13									18
31	202	55	179	6									17

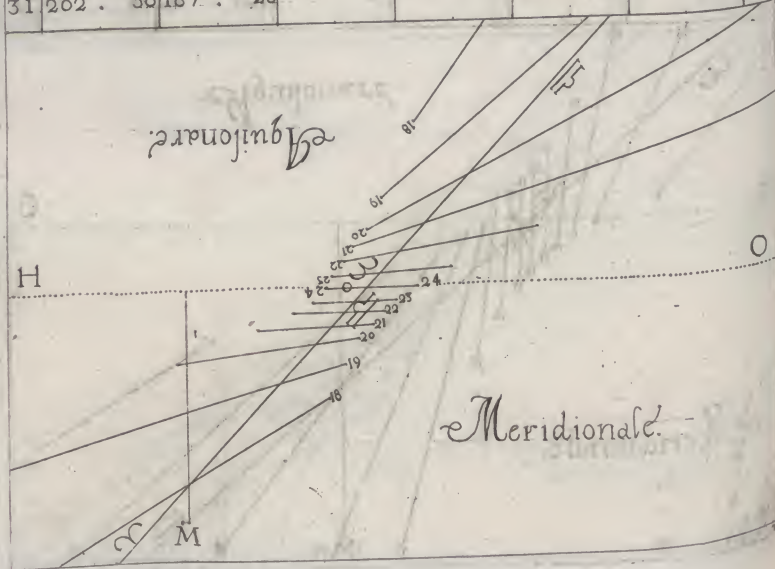


45.	Tri.	H. Aquilo
4	7	
46	6	
40	5	
32	4	
35	3	
33	2	
26	1	
28	24	
20	23	
44	22	
37	21	
20		
19		
18		
20		
17		

Declinatio ad Ort. Gra. 75 Lat. 45.									
Tropic. Capric.		Aquinotialis.		Tropic. Cancr.					
Arcus	Vmbra.	Arcus	Vmbra.	Arcus	Vmbra.				
G.	M.P.	M.G.	M.P.	M.G.	M.P.	M.			
20	291	44	67	58					
19	292	49	27	13					
18	292	23	15	36	316	0	64	14	
17	289	27	9	40	319	3	25	32	
16	280	56	5	49	322	58	14	21	340
									1174
									6
									8
15	254	52	3	17	329	3	8	86	344
14	299	6	3	5	341	40	4	48	352
13	169	6	5	25	22	44	2	25	3
12	159	15	9	5	90	0	3	13	20
11	155	50	14	39	113	14	6	18	44
									0
									8
									17
									13
10	155	9	25	2	122	2	10	46	67
9	156	4	57	3	126	51	18	4	84
8					130	19	35	3	95
7					133	19	165	24	103
6									107
									49
									74
									34
									18



Tab. CLII.		Declinatio. ad Occas. Gra. 75. Lat. 45.										H Aguilo
H Merid		Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.						
		Arcus.	Vmbra	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
		G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.	M G.	M P.	M
17	.			44	0 64	14	12	18	0 45	3	7	
18	.											57 6
19	69	9	164	4	40	57	25	32	3	28	14	41 5
20	67	29	37	26	37	1	14	20	349	49	10	27 4
21	67	12	19	32	30	56	8	36	329	38	8	25 3
22	68	50	11	58	18	20	4	48	305	28	8	16 2
23	74	18	7	19	338	16	2	25	284	28	10	5 1
24	90	0	4	12	270	0	3	13	270	0	13	59 24
25	136	6	2	45	246	46	6	18	260	40	21	29 23
26	181	55	4	12	237	58	10	46	254	38	40	18 22
27	197	46	7	20	233	9	18	4	250	41	194	22 21
28	203	6	11	53	229	41	35	3				20
29	204	54	19	32	227	41	165	24				19
30	204	31	37	16								18
31	202	80	167	26								14 17

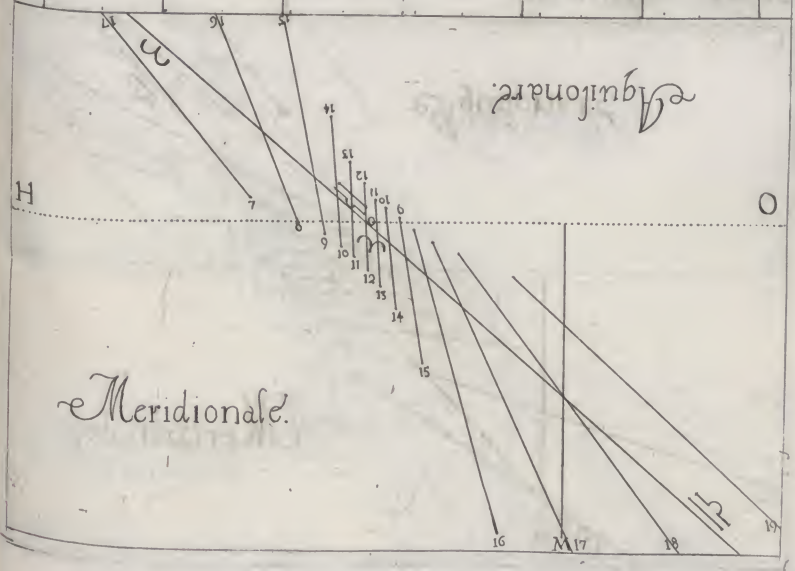


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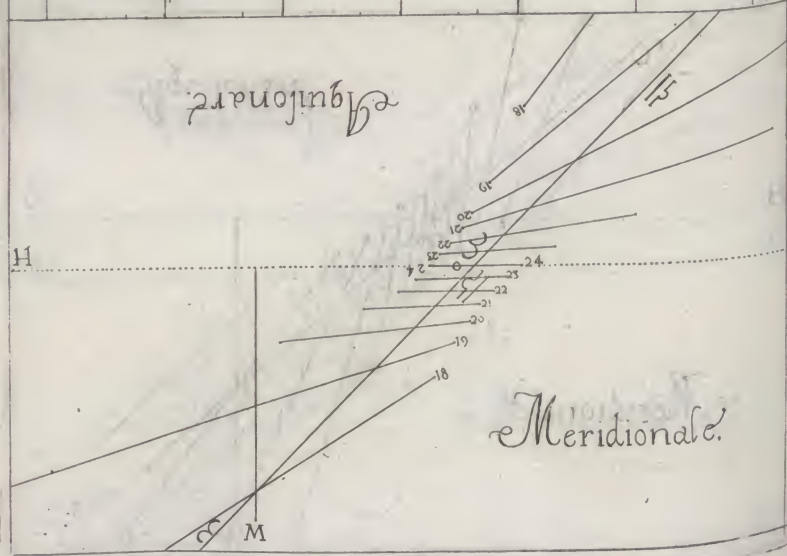
16 2
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Tab. CIII		Declinatio ad Ort. Gra. 76. Lat. 45.									
H. Merid.	H. Aguil.	Tropie. Capric.		Aequinoctialis.		Tropie. Cancr.		H. Aguil.			
		Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.				
		G.	M P.	M G.	M P.	M G.	M P.		M	P	M
20	291	41	528	58				4			
19	292	40	28	27				5			
18	292	7	16	9	315	52	69	6			
17	289	4	10	0	318	45	26	7			
16	280	35	6	4	322	11	14	8			
15	255	54	3	30	327	50	8				
14	202	50	3	9	339	17	4				
13	171	16	5	21	17	2	2				
12	160	31	8	58	90	0	3				
11	156	36	14	25	114	0	6				
10	155	34	24	33	122	36	10				
9	156	15	55	2	127	20	17				
8					130	41	33				
7					133	21	139				
6											
5											
4											
3											
2											
1											
0											

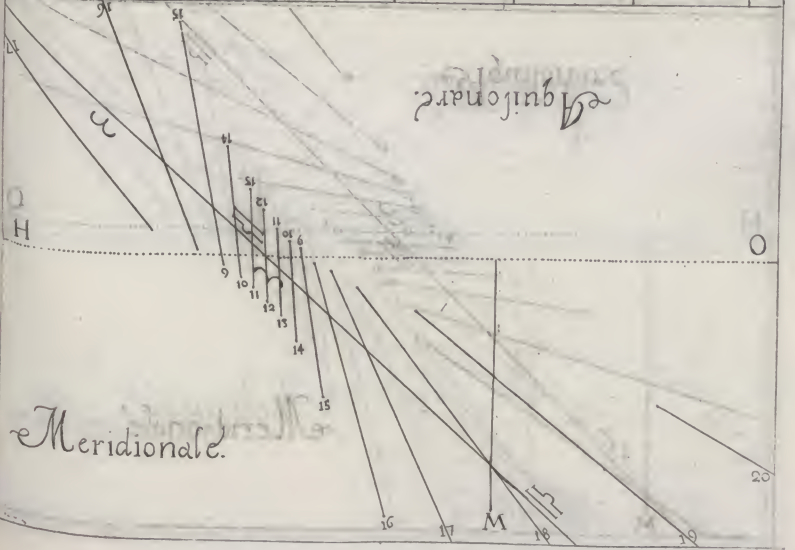


Tab. CLIV.		Declinatio ad Occas. Gra 76. Lat. 45.													
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquilo					
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.						
	G.	M	P.	M	G.	P.	M	G.	M		P.				
17								18	18	46	4	7			
18				44	8	69	7	12	48	23	10	8			
19	69	10	213	32	41	15	26	12	4	17	14	44	5		
20	67	36	39	32	37	49	14	40	38	57	10	24	4		
21	67	25	20	16	32	10	8	47	33	54	8	16	3		
22	69	13	12	18	20	43	4	54	30	6	21	8	2		
23	74	40	7	36	34	2	54	2	20	28	4	44	1		
24	19	0	4	26	27	0	3	0	27	0	13	29	24		
25	132	54	2	55	24	6	0	3	26	35	20	36	23		
26	179	1	4	11	23	7	24	10	26	25	4	47	22		
27	196	8	7	13	23	2	40	17	31	25	0	39	155	58	21
28	202	12	11	43	22	9	29	33	33						20
29	204	13	19	1	22	6	39	139	30						19
30	204	13	36	19											18
31	202	47	149	10											17

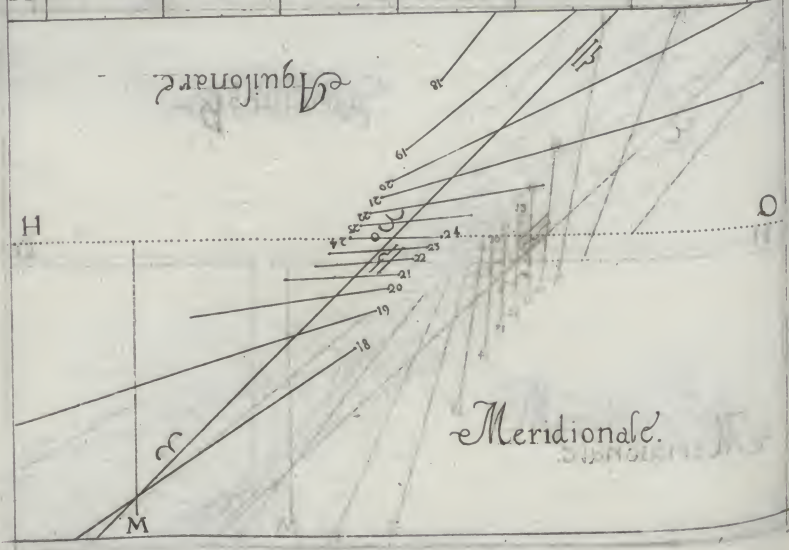


45.	
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4. 7	
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29. 24	
36. 23	
47. 22	
58. 21	
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7. 17	

Tab. CLV. Declinatio ad Ort. Gra. 77. Lat. 45.									
Tropic. Capric.		Aequinoctialis.				Tropic. Cancr.			
Arcus. Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.	
H. Merid.		G.	M. P.	M. G.	M. P.	M. G.	M. P.	M.	H. Aguil.
20	291	37	83	57					4
19	292	30	29	48					5
18	291	49	16	42	315	45	74	55	6
17	288	39	10	20	318	19	27	7	7
16	280	10	6	20	321	37	14	62	8
						339		54	
						80			
15	256	32	31	43	326	43	8	57	9
14	206	53		18	337	10	5	350	10
13	173	27	15	20	12	4	2	17	11
12	161	45	8	81	90	0	2	46	12
11	157	22	14	14	114	50	3	49	13
								41	
								44	
10	156	88	24	123	16	10	66	3	14
9	156	27	53	127	47	16	84	15	15
8				130	46	32	95	55	16
7				133	26	119	32	103	17
G								107	18
								56	
								61	

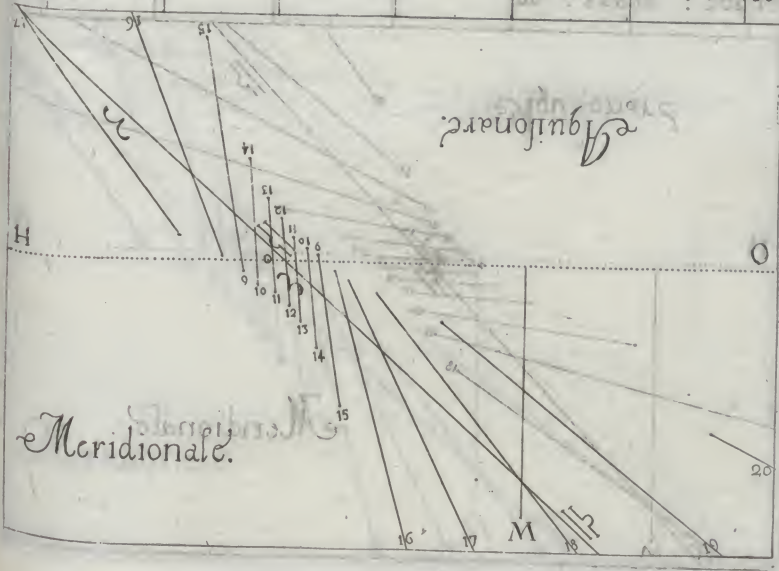


Tab. Declinatio ad Occas. Gra. 77. Lat. 45.														
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Canceri.		H. Aquilo							
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.								
	G.	M. P.	M. G.	M. P.	M. G.	M. P.				M.				
17							18.	29	47.	4.	7.			
18			44	15	74	55	13.	16	23.	23	6			
19	69.	11	355.	34	41.	7	27.	7	5.	5	14.	46	5	
20	67.	43	42.	2	38.	62	14.	62	352.	3	10.	20	4	
21	67.	40	21.	2	33.	87	8.	1	57	332.	9	8.	7.	3
22	69.	32	12.	42	22.	50	5.	0	307.	13	7.	48	2	
23	78.	6	7.	53	357.	46	2.	17	285.	6	9.	25	1	
24	90.	0	4.	40	270.	0	2.	46	270.	0	13.	2	24	
28	130.	28	3.	5	245.	10	5.	49	260.	28	19.	31	23	
26	176.	10	4.	13	236.	44	10.	8	254.	27	33.	50	27	
27	194.	30	7.	9	232.	0	13	16.	57	250.	58	133	9	21
28	201.	17	11.	34	229.	14	32.	4.	28	28	100	20	20	
29	203.	38	18.	54	226.	34	119.	32				19	19	
30	203.	54	35.	31								P.	M	18
31	202.	42	138.	38								74.	55	17

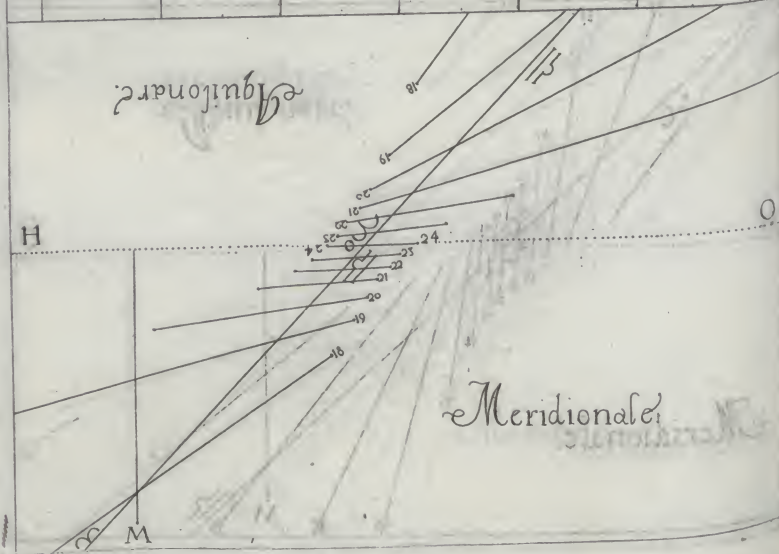


Tab. CLVII. Declinatio ad Ort. Gra 78. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis		Tropic. Cancr.		H. Aquilo
	Arcus	Vmbra	Arcus	Vmbra	Arcus	Vmbra	
G.	M.P.	M.G.	M.P.	M.G.	M.P.	M.	
20	291	34 24	33				4
19	292	20 31	19				5
18	291	32 17	20 315	42 81	6		6
17	288	14 20	43 318	1 27	56		7
16	279	50 6	37 321	4 18	21 339	44 83	48 8
15	257	19 3	38 325	36 9	9 343	45 30	42 9
14	209	40 3	22 334	52 5	6 350	9 17	52 10
13	175	54 5	19 6	38 2	15 0	26 11	50 11
12	163	9 8	45 90	0 2	33 16	52 8	45 12
11	158	11 14	2 115	45 5	34 40	28 7	30 13
10	156	31 23	41 123	51 9	49 55	26 8	10 14
9	156	40 51	30 127	6 16	30 84	8 10	46 15
8			13 1	2 30	53 95	59 15	41 16
7			133	27 104	15 103	22 25	30 17
6					107	59 55	44 18

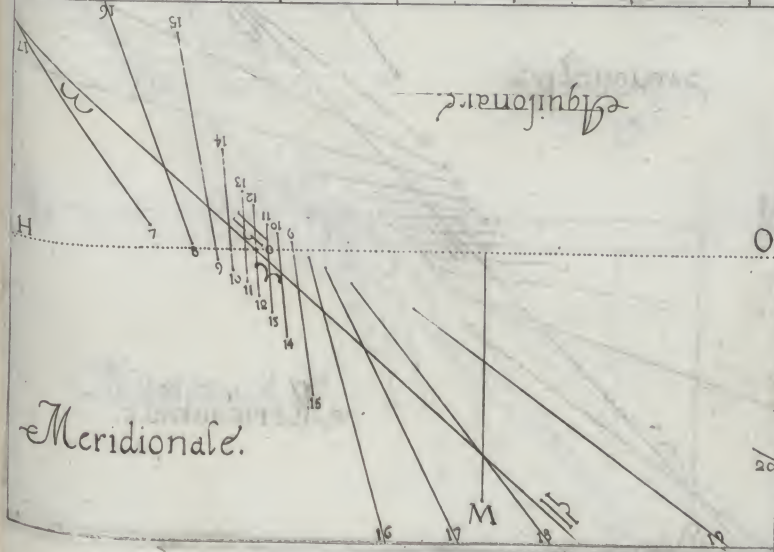


Tab. CLVIII.		Declinatio ad Occas. Gra. 78. Lat. 45.												H Merid
		Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H Merid			
		Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
		G.	M	P.	M	G.	M	P.	M	G.		M	P.	
17										18	48	48	15	7
18					44	18	81	6	13	49	23	38	49	6
19	69	12	127	21	41	59	27	56	5	58	14	49	5	5
20	67	49	44	50	38	56	15	21	353	19	10	17	4	4
21	67	54	21	54	34	24	9	9	333	35	7	58	3	3
22	69	54	13	9	28	8	5	6	308	20	7	33	2	2
23	75	32	8	12	353	22	2	15	285	29	9	4	1	1
24	90	0	4	57	270	0	2	33	270	0	12	33	24	4
25	127	47	3	17	244	13	5	34	260	21	19	1	23	3
26	173	8	4	14	236	9	9	49	254	21	33	42	22	2
27	192	44	7	5	231	54	16	30	250	35	107	50	21	1
28	200	11	11	25	228	58	30	53					20	2
29	203	1	18	36	226	34	104	15					19	1
30	203	4	35	54									18	1
31	202	37	528	58									17	1



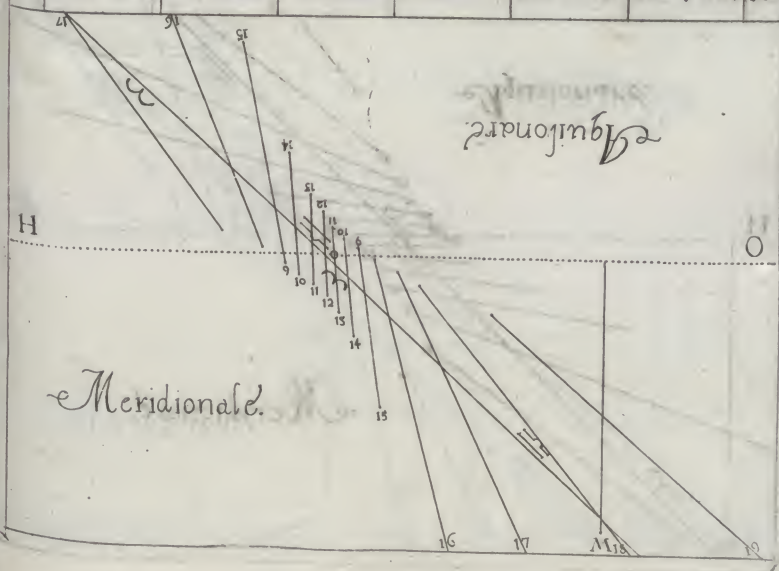
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15 7	
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58 3	
33 2	
4 1	
33 24	
1 23	
42 22	
50 21	
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Do	
M	
6 17	

Tab. CLIX.		Declinatio ad Ort. Gra. 79. Lat. 45.												
H. Merid.	Tropie Capric.				Aequinoctialis.				Tropie Cancr.				H. Aquid.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M P.	MG.	M P.	MG.	M P.	MG.	M P.	M					
20	291.	31	109.	17										4
19	292.	12	32.	51										5
18	291.	17	17.	55	315.	32	87.	47						6
17	288.	0	11.	3	317.	38	28.	47						7
16	279.	35	6.	52	320.	27	15.	40	339.	37	87.	30		8
15	257.	55	4.	10	324.	33	9.	20	343.	24	31.	7		9
14	212.	24	3.	28	332.	46	5.	12	349.	33	18.	0		10
13	178.	0	5.	18	1.	28	2.	15	359.	29	11.	56		11
12	164.	23	8.	40	90.	0	2.	20	15.	36	8.	40		12
11	158.	56	13.	48	116.	40	5.	21	39.	15	7.	19		13
10	156.	58	23.	18	124.	42	9.	32	64.	49	7.	55		14
9	156.	53	50.	12	128.	42	16.	28	4.	1	10.	24		15
8					131.	15	29.	48	96.	4	15.	11		16
7					133.	28	96.	34	103.	29	24.	30		17
6									108.	3	52.	4		18

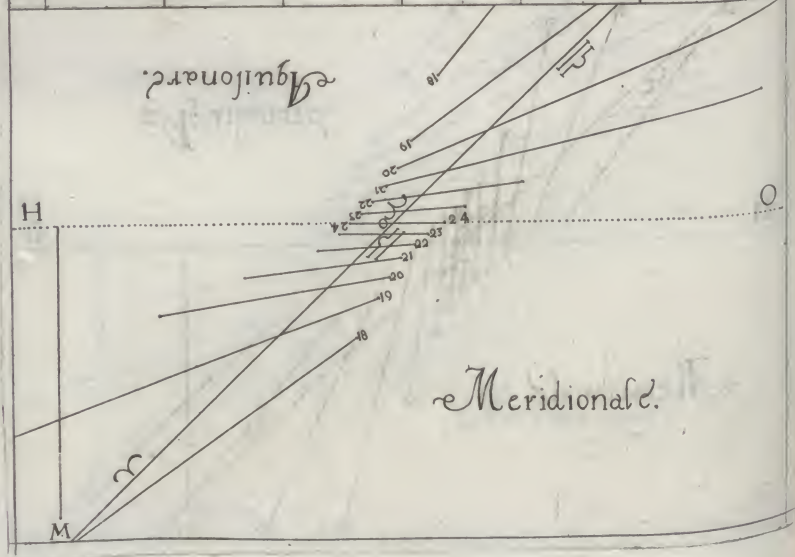


5.	
cri.	H. Aquil.
bra.	M.
26	7
48	6
53	5
15	4
53	3
21	2
46	1
8	24
22	23
10	22
13	21
20	19
18	18
47	17

Tab. cxi.		Declinatio ad Ort. Gra. 80. Lat. 45.											
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M	G.	M P.	M	G.	M P.	M	G.	M P.	M	
20	271	25	136	45									4
19	292	5	34	37									5
18	291	5	18	36	315	33	97	33					6
17	287	39	11	27	317	29	29	53					7
16	279	21	7	10	319	55	16	4	339	29	89	50	8
15	258	41	4	25	323	30	9	32	343	2	31	40	9
14	215	33	3	36	330	43	5	20	348	53	16	48	10
13	180	22	5	17	355	57	2	15	358	7	11	57	11
12	163	47	8	34	90	0	2	16	14	15	8	35	12
11	159	39	13	37	117	41	5	8	37	56	7	5	13
10	157	26	22	51	125	22	9	16	64	9	7	39	14
9	157	8	48	19	129	8	15	35	83	53	10	2	15
8					131	35	28	37	96	1	14	41	16
7					133	32	87	3	103	40	23	20	17
6									108	3	48	39	18



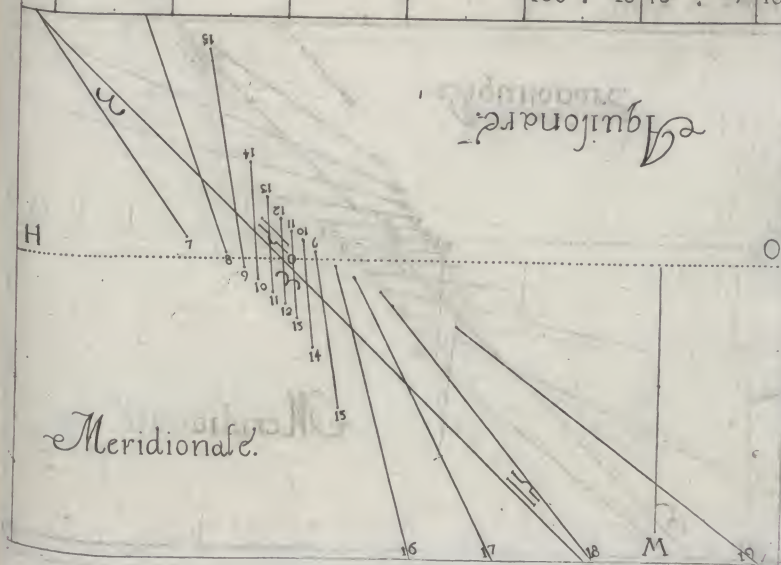
Tab. CLXII.		Declinatio ad Occas. Gra. 80. Lat. 45.											
H Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H Aquil.
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M	
17									19	22	50	57	7
18					44	35	97	33	14	47	24	12	6
19					42	31	29	53	7	35	14	57	5
20	68	0	51	24	40	5	16	4	355	37	10	15	4
21	68	15	33	39	36	30	9	32	336	23	7	44	3
22	70	26	14	3	29	17	5	20	310	22	7	18	2
23	76	18	8	50	4	3	2	15	386	16	8	27	1
24	90	0	5	26	270	0	2	6	270	0	11	41	24
25	122	40	3	38	242	19	5	8	260	6	17	35	23
26	167	40	4	18	234	38	9	15	254	9	30	28	22
27	189	29	6	59	230	52	15	35	250	31	82	51	21
28	197	59	11	12	228	25	28	37					20
29	201	59	17	59	226	28	87	3					19
30	202	48	33	28							Alt. P.	Dol. M	18
31	202	31	111	3							97	33	17



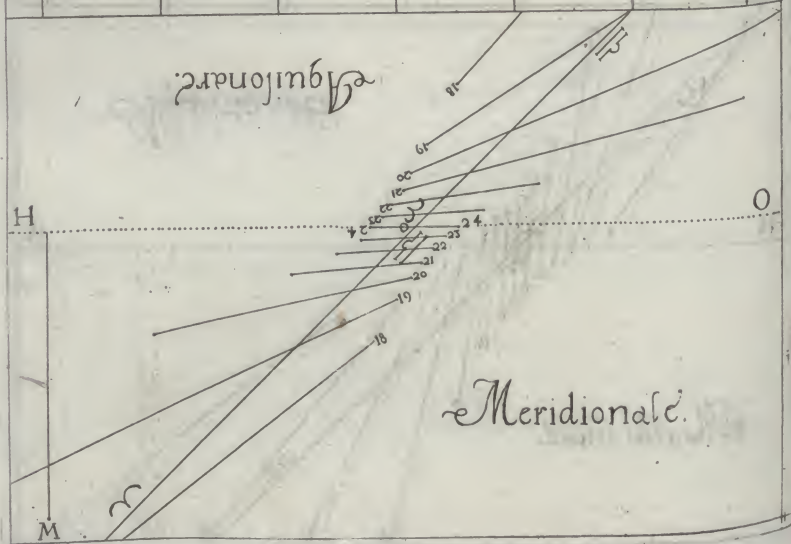
45.

cri.	H. Aquila
bra.	M
57	7
12	6
57	5
15	4
44	3
18	2
27	1
41	24
35	23
28	22
51	21
20	20
Do.	19
M	18
33	17

Tab. CXIII.		Declinatio ad Ort. Gra. 81. Lat. 45.																	
H. Merid.	Tropic. Capric.				Æquinoctialis.				Tropic. Cancr.				H. Aquilo						
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.								
	G.	M	P.	M	G.	M	P.	M	G.	M	P.	M							
20	291	.	28	158	.	23								4					
19	291	.	56	36	.	29								5					
18	290	.	51	19	.	15	315	.	22	108	.	24		6					
17	287	.	20	11	.	49	317	.	8	30	.	55		7					
16	279	.	3	7	.	26	319	.	20	16	.	28	339	.	22	96	.	20	8
15	259	.	2	4	.	38	322	.	31	9	.	44	342	.	40	32	.	6	9
14	217	.	53	3	.	44	328	.	34	5	.	27	348	.	15	18	.	16	10
13	182	.	32	5	.	18	345	.	52	2	.	16	357	.	28	11	.	58	11
12	167	.	2	8	.	31	90	.	0	1	.	54	12	.	49	8	.	31	12
11	160	.	36	13	.	28	118	.	55	4	.	53	36	.	35	6	.	58	13
10	157	.	56	22	.	33	126	.	10	9	.	0	63	.	26	7	.	23	14
9	157	.	20	47	.	10	129	.	36	15	.	6	83	.	48	9	.	42	15
8							131	.	58	27	.	36	96	.	14	14	.	9	16
7							133	.	47	79	.	21	103	.	43	22	.	31	17
6													108	.	13	45	.	7	18

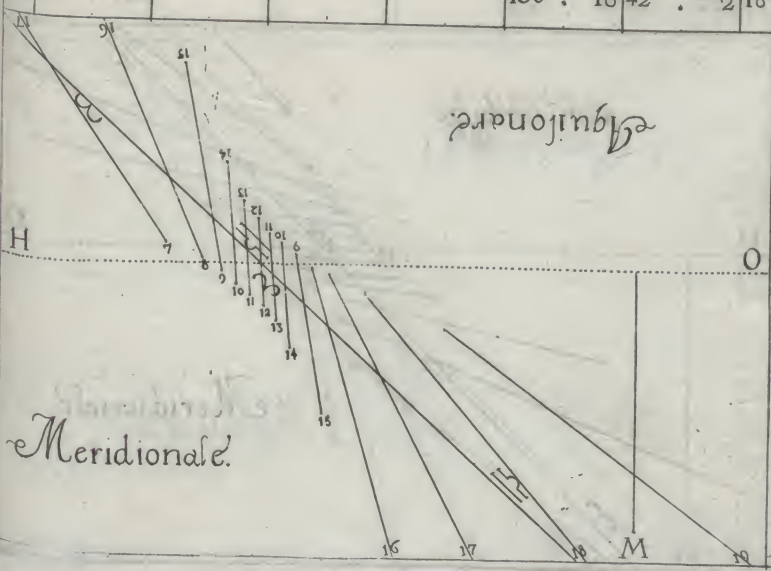


Tab. CLXIV.		Declinatio ad Occas. Gra. 81. Lat. 45.												
H. Merid.	Tropic. Capric.				Aequinoctialis.				Tropic. Cancr.				H. Aquil.	
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.			
	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.	G.	M. P.	M.		
17									19	24	52	5	7	
18				44	38	108	24	15	13	24	26	6		
19				42	52	30	55	8	17	15	1	5		
20	68	5	55	36	40	40	16	28	35	6	44	10	12	4
21	68	26	24	38	37	29	9	44	33	7	44	7	37	3
22	70	43	14	31	31	26	5	27	31	1	25	6	55	2
23	76	26	9	8	9	8	2	16	28	6	37	8	11	1
24	90	0	5	41	20	7	0	1	54	27	0	11	19	24
25	122	6	3	49	24	1	5	4	55	26	2	17	4	23
26	165	3	4	21	23	50	9	0	25	4	3	29	8	22
27	187	47	6	56	2	24	15	6	25	0	27	76	6	21
28	193	13	11	3	22	8	2	27	36					20
29	201	12	17	4	22	6	13	79	21					19
30	202	16	32	29										18
31	202	22	105	19										17



5.	
ri.	H. Aquil.
ora.	
M	
5 7	
26 6	
1 5	
12 4	
37 3	
55 2	
11 1	
19 24	
4 23	
8 22	
6 21	
20	
P. L. 19	
M. 18	
24 17	

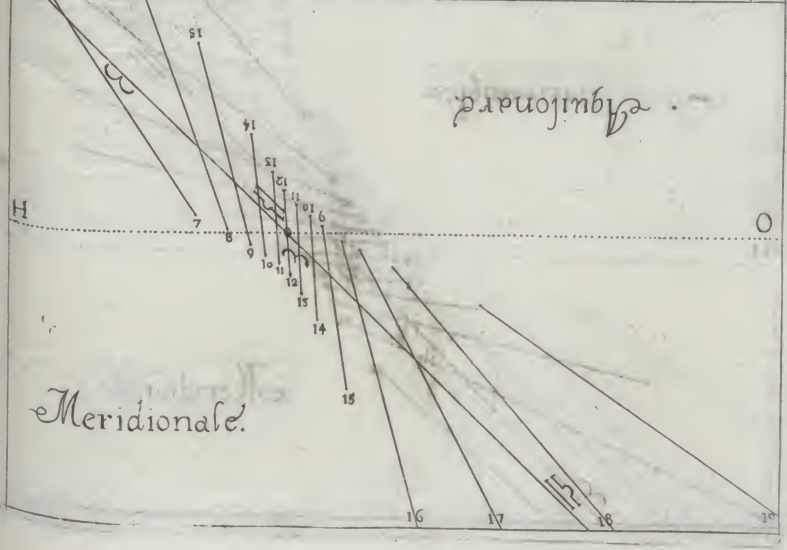
Tab. CLXV. Declinatio. ad Ort. Gra. 82. lat. 45.									
H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.		
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.
	G.	M	P.	M	G.	M	P.	M	G.
20	291	26	173	27					
19	291	49	38	34					
18	290	37	19	58	315	18	121	39	
17	287	3	12	14	316	48	31	59	
16	278	48	7	44	318	46	16	51	339
									15
15	259	36	4	52	321	31	9	57	342
14	220	27	3	53	327	5	5	35	347
13	184	48	5	18	345	39	2	19	356
12	168	31	8	27	90	0	1	41	11
11	161	28	13	22	120	1	4	42	35
									12
10	158	24	22	12	126	56	8	44	63
9	157	33	45	48	130	2	14	46	83
8	158	15	724	6	132	7	26	42	96
7					133	48	73	25	103
6									108
									18
									42
									2



45.	
cri.	H. Aquilo
bra.	
M	
32 7	
44 6	
6 5	
12 4	
30 3	
42 2	
53 1	
56 24	
26 23	
45 22	
36 21	
20	
Pol 19	
M 18	
39 17	

Tab. CLXVII. Declinatio ad Ortū Gra. 83. Lat. 45.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
G	M	P	M	G	M	P	M
19	291	42 40	57				5
18	290	26 20	44 315	15 140	57		6
17	286	45 12	38 316	39 33	20		7
16	278	34 8	13 18	14 17	19 339	9 108	7 8
15	259	57 5	7 320	38 10	10 341	58 33	11 9
14	222	36 4	2 325	26 5	43 347	0 18	36 10
13	187	2 5	21 341	3 2	22 358	30 12	3 11
12	169	50 8	22 90	0 1	28 10	9 8	24 12
11	162	19 13	13 121	29 4	30 33	47 6	39 13
10	158	56 21	53 127	44 8	29 60	54 6	55 14
9	157	49 44	43 130	43 14	20 83	28 9	1 15
8	158	17 572	56 132	34 25	43 96	25 13	11 16
7			183	56 67	29 103	58 20	48 17
6					108	23 39	42 18
5					110	50 222	48 19



Meridionale

Equinoctiale

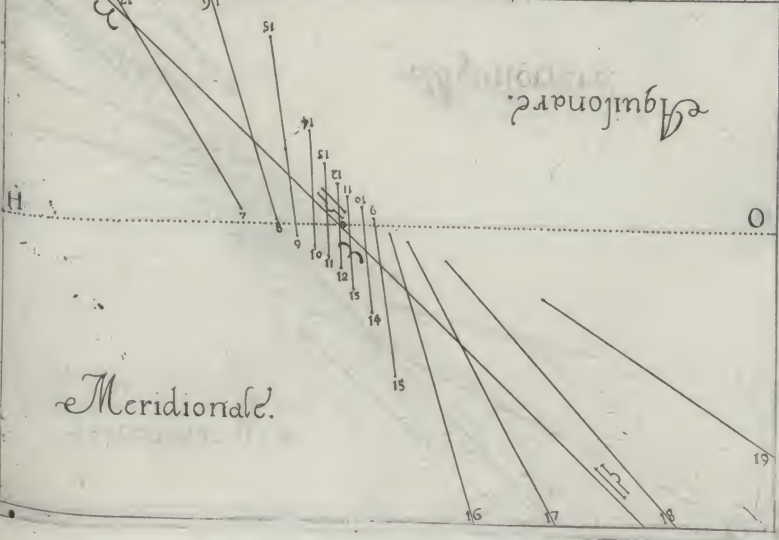
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

45.	
cri.	H. Aquilo
mbra.	
M	
27	
86	
125	
14	
253	
302	
361	
3324	
5223	
3322	
1321	
20	
Do	
29	
M	
18	
57	17.

Tab.
CLXIX.

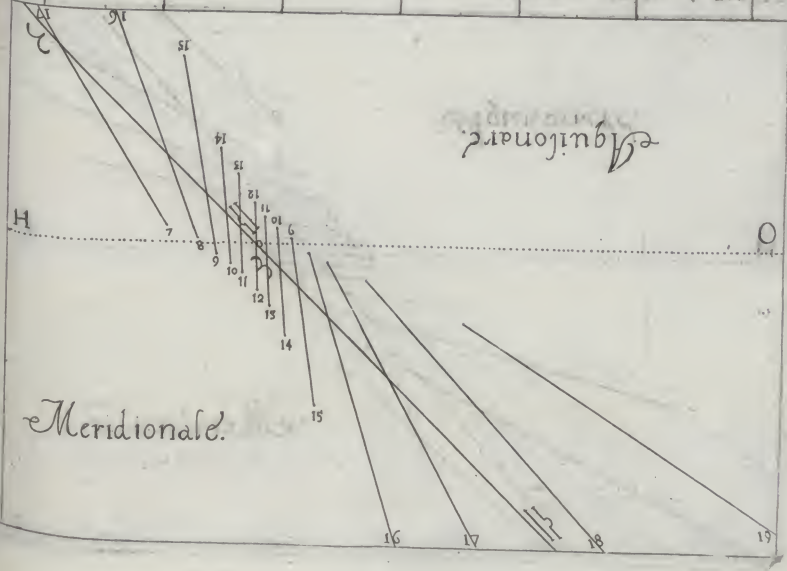
Declinatio ad Ort. Gra. 84. Lat. 45.

H. Aquilo	Tropie Capric.				Aequinoctialis.				Tropie Cancr.				H. Aquilo
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G.	M P.	M	G.	M	P.	M	G.	M	P.	M		
17	291	37	43	25									5
18	290	14	21	32	315	14	162	8					6
17	286	28	13	4	316	29	34	30					7
16	278	20	8	20	317	39	17	41	339	3	113	14	8
15	264	24	5	22	319	43	10	24	341	39	33	46	9
14	224	54	4	12	323	42	5	52	346	21	18	44	10
13	189	19	5	23	336	51	2	27	354	32	12	4	11
12	171	21	8	20	90	0	1	16	8	43	8	20	12
11	163	13	13	5	122	49	4	18	32	14	6	30	13
10	159	28	21	34	128	36	8	15	61	15	6	38	14
9	158	5	43	34	131	14	14	0	83	20	8	42	15
8	158	18	412	29	132	44	24	58	96	33	12	43	16
7					133	59	63	24	104	8	19	59	17
6									108	30	37	2	18
5									110	52	160	52	19

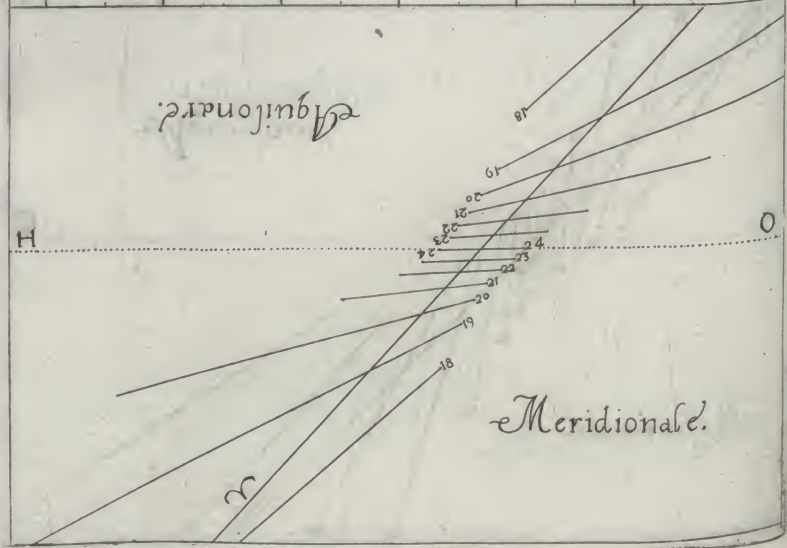


5.	cri.	H. Aquila
	bra	
	M	
	37	7
	21	6
	18	5
	11	4
	19	3
	19	2
	19	1
	11	24
	19	23
	23	22
	47	21
	20	
	Pol	19
	M	18
	8	17

Tab. CLXXI. Declinatio ad Ort. Gra. 85. Lat. 45.											
Tropie. Capric.			Aequinoctialis.			Tropie. Cancr.			H. Aquila		
Arcus.			Arcus.			Arcus.			H. Aquila		
Vmbra.			Vmbra.			Vmbra.			H. Aquila		
G.	M	P.	G.	M	P.	G.	M	P.	G.	M	P.
19	291	30 46	32								
18	290	0 22	26 315	7	194	22					
17	286	16 13	30 316	10	36	11					
16	279	9 8	40 317	11	18	16 338	56	122	1	8	
15	260	43 5	39 318	47	10	39 341	19	34	20	9	
14	226	40 4	26 322	40	6	2 345	42	18	54	10	
13	191	29 5	26 332	11	2	34 353	29	12	6	11	
12	172	39 8	19 90	0	1	3 7	16	8	16	12	
11	164	4 12	56 124	19	4	5 30	34	6	21	13	
10	160	0 21	16 129	30	8	0 60	6	6	23	14	
9	158	22 42	29 131	50	13	33 83	9	8	24	15	
8	158	22 343	44 133	4	24	0 96	34	12	18	16	
7			134	12	58	33 103	39	19	16	17	
6						108	37	35	26	18	
5						110	54	136	21	19	

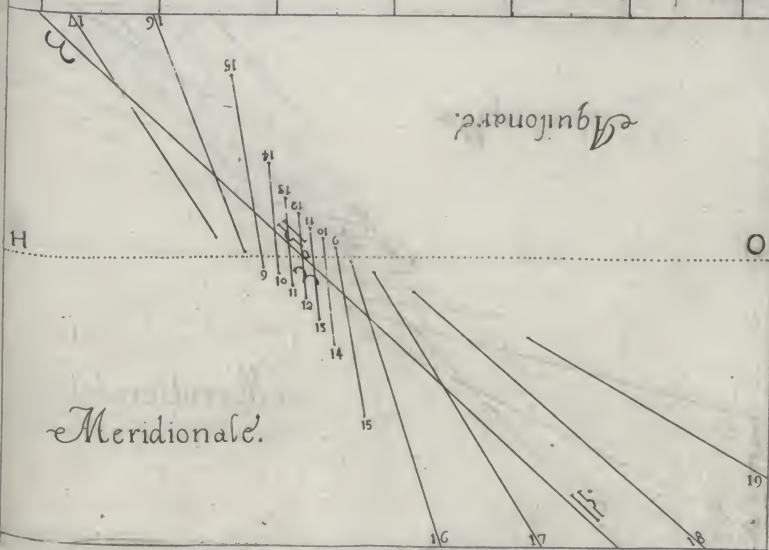


Tab. CLXXII.		Declinatio ad Occas. Gra. 85. Lat. 45.										H. Angulo	
H. Merid.	Tropic. Capric.			Aequinoctialis.				Tropic. Capric.					
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M	P	G.	M	P	G.	M	P	M			
17									20	12	58	23	7
18				44	53	194	22	17	4	25	40	6	
19				43	50	36	11	11	23	15	24	5	
20	68	20	80	42	49	18	16	1	26	10	12	4	
21	69	5	29	41	13	10	39	343	50	7	13	3	
22	71	45	16	37	20	6	2	316	33	6	8	2	
23	77	36	10	26	27	49	2	34	288	41	7	1	
24	90	0	6	45	270	0	1	3	270	0	9	49	24
25	116	29	4	39	235	41	4	5	259	29	14	48	23
26	155	5	4	42	230	30	8	0	253	33	24	20	22
27	180	51	6	50	228	10	13	33	249	29	52	48	27
28	192	55	10	41	226	56	24	0					20
29	198	36	16	56	235	48	58	33			Alt. Sol		19
30	201	12	30	6							P. M		18
31	201	51	85	10							194	22	17

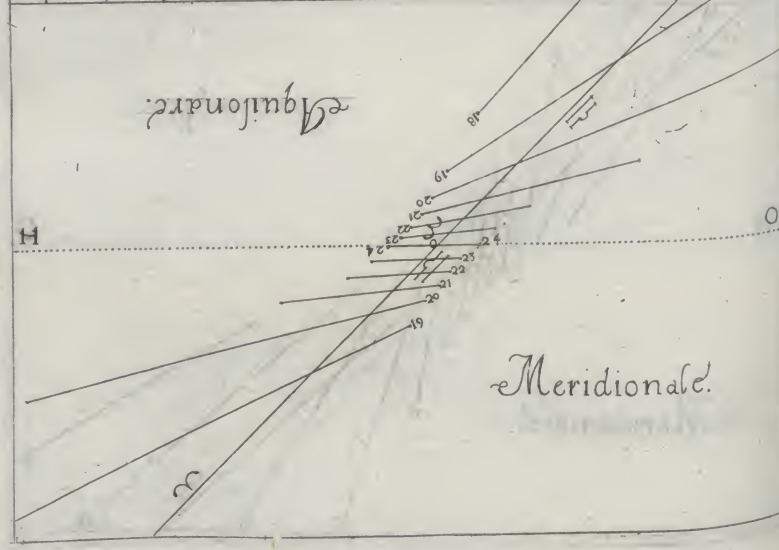


45.	
cri.	H. Agula
bra.	
M	
23 7	
40 6	
24 5	
12 4	
13 3	
8 2	
2 1	
49 24	
48 23	
20 22	
48 27	
20	
19	
M 18	
22 17	

Tab. CLXXIII Declinatio ad Ort. Gra. 86. Lat. 45.											
Tropie Capric.			Aequinoctialis.			Tropie. Cancr.					
Arcus Vmbra.			Arcus Vmbra.			Arcus Vmbra.					
G	M	P	G	M	P	G	M	P	G	M	P
19	291	2649	40								
18	289	5223	17	315	19	242	28				
17	285	5913	59	315	48	37	20				
16	277	578	57	316	50	18	38	338	52	128	33
15	261	45	32	318	10	10	54	340	59	35	1
14	228	344	32	320	18	6	22	345	8	19	6
13	193	365	28	327	8	2	31	352	32	12	9
12	174	98	15	90	0	0	50	4	35	7	57
11	164	5812	50	126	12	3	55	29	0	6	14
10	160	3220	58	130	23	7	47	59	13	6	10
9	158	3641	26	132	18	13	17	82	58	8	6
8	158	23286	21	133	12	23	26	96	45	11	52
7				134	16	55	44	104	26	18	32
6								108	43	33	29
5								110	56	111	40



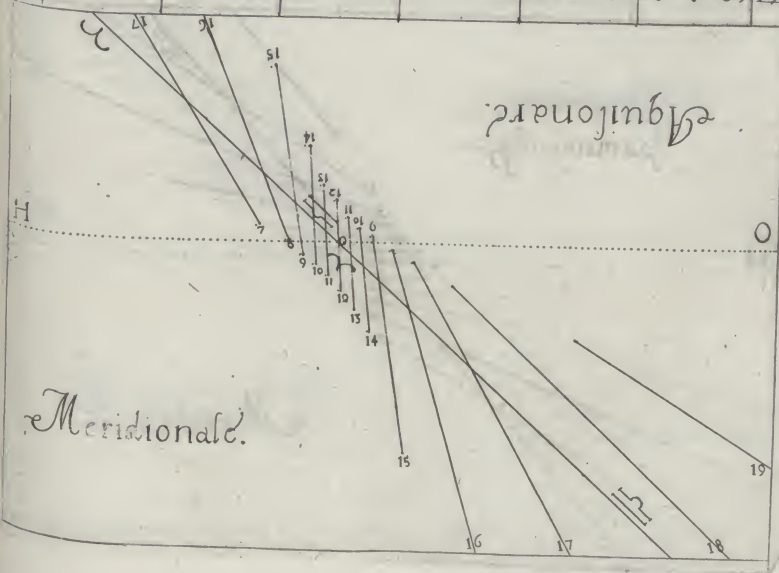
Tab. CLXXIV		Declinatio. ad Occas Gra. 86. Lat. 45.													
H Merid	Tropic. Capric.				Aequinoctialis				Tropic. Cancr.				H Aguilo		
	Arcus.		Vmbra		Arcus.		Vmbra.		Arcus.		Vmbra.				
	G.	M	P	M	G.	M	P	M	G.	M	P	M			
17										20	26	60	9	7	
18					44	41	242	28	17	31	26		2	6	
19					44	12	37	20	12	10	15		31	5	
20	68	24	89	56	43	10	18	38	2	36	10		12	4	
21	69	15	30	45	41	50	10	54	345	27	7		9	3	
22	71	57	17	13	39	42	6	22	317	57	5		57	2	
23	77	48	10	50	32	52	2	31	282	5	6		47	1	
24	90	0	7	1	270	0	0	50	270	0	9		29	24	
25	115	22	4	52	233	48	3	55	259	22	14		17	23	
26	152	47	4	48	229	37	7	47	253	24	23		20	22	
27	179	5	6	51	227	42	13	17	253	7	48	48	21		
28	191	50	10	34	226	48	23	26					20		
29	197	57	16	44	225	44	55	44					19		
30	200	49	29	30									18		
31	201	43	81	16									242	28	17



Tab.
CLXXV.

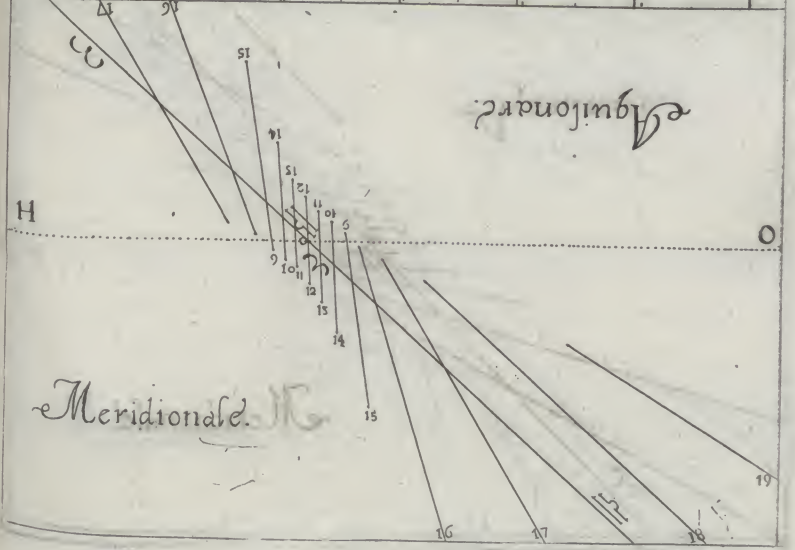
Declinatio ad Ort. Gra 87. Lat 45.

H. Merid.	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquilo			
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.				
	G.	M	P.	M	G.	M	P.	M	G.		M	P.	M
19	291	21	53	40									5
18	289	39	24	16	315	5	335	15					6
17	285	44	14	29	316	40	39	10					7
16	271	46	9	16	316	18	20	36	338	44	144	26	8
15	261	19	6	6	317	12	11	11	340	39	35	40	9
4	230	10	4	43	318	57	6	23	344	29	19	18	10
13	295	44	5	32	324	38	2	48	351	30	12	13	11
12	175	37	8	14	90	0	0	48	4	26	8	16	12
11	165	51	12	44	127	53	3	44	27	16	6	5	13
10	161	4	20	43	133	4	7	34	58	9	5	58	14
9	158	52	40	26	133	24	13	3	82	46	7	48	15
8	158	24	236	54	133	54	22	38	96	49	11	29	16
7					134	34	52	16	104	36	17	49	17
6									108	49	31	55	18
5									110	58	98	39	19

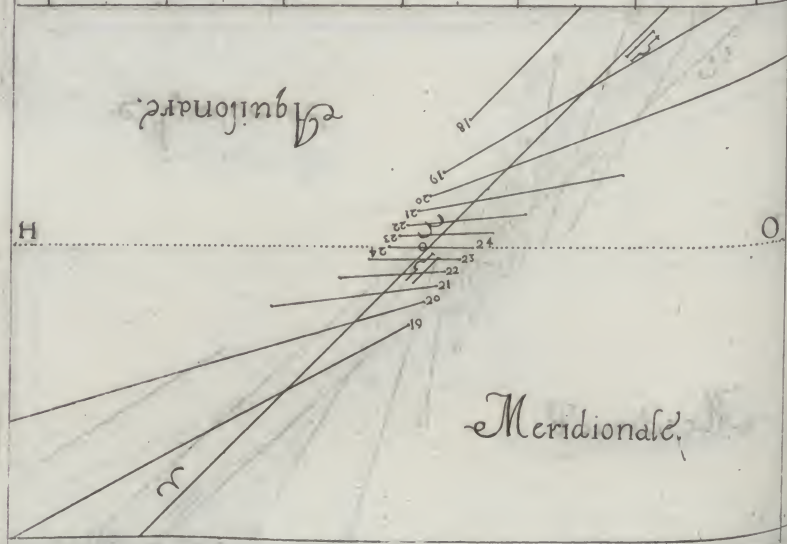


it. 45.
ncr.
mbra.
M
12 7
26 6
36 5
15 4
6 3
47 2
29 1
10 24
47 23
25 22
44 21
20
Do 19
M 18
14 17

Declinatio ad Ort. Gra. 88. Lat. 45.											
Tropic' Capric.			Aequinoctialis.			Tropic' Cancr.					
Arcus.			Vmbra.			Arcus.			Vmbra.		
G.	M.	P.	G.	M.	P.	G.	M.	P.	G.	M.	P.
19	291	16 57	49								
18	289	32 25	17 315	2	485	17					
17	285	33 14	58 315	32	40	44					
16	277	38 9	31 216	5	19	40 338	42	148	37	8	
15	261	38 6	23 316	23	11	26 340	20	36	21	9	
14	231	49 4	55 317	38	6	33 343	54	19	29	10	
13	297	43 5	36 320	38	2	55 350	35	12	27	11	
12	177	4 8	12 90	0	0	25 2	56	8	12	12	
11	166	44 12	37 129	53	3	3 25	30	5	59	13	
10	161	36 20	25 133	13	7	20 57	5	5	44	14	
9	159	9 39	35 133	34	12	37 82	36	7	30	15	
8	158	26 218	4 133	59	22	2 97	2	11	4	16	
7			134	36	49	40 104	46	17	14	17	
6						108	87	30	19	18	
5						111	1	85	23	19	

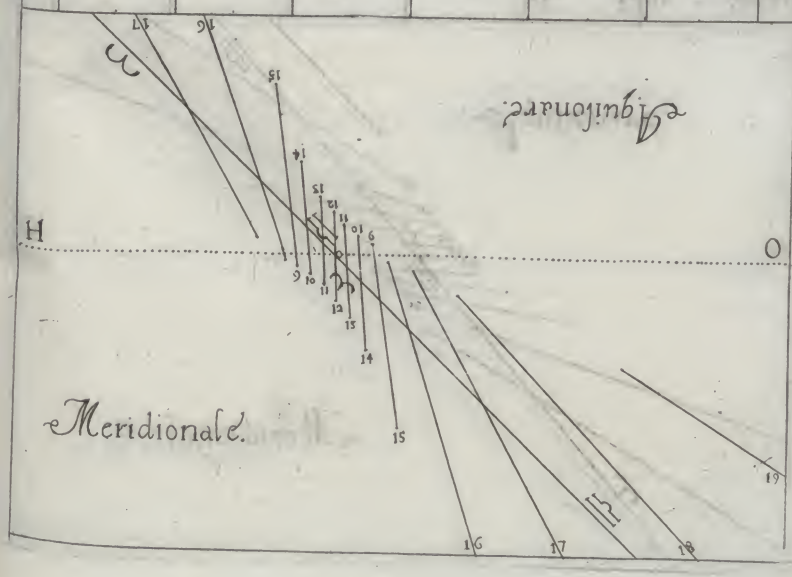


Tab. CLXXVIII		Declinatio ad Occas. Gra. 88. Lat. 45.									
H. Merid.	Tropie. Capric.			Aequinoctialis.			Tropie. Cancr.			H. Aquilo.	
	Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.		
	G.	MP	MG	G.	MP	MG	G.	MP	M		
17							20	47	64	23	7
18				44	58	485	17	18	24	26	46
19				44	28	40	44	13	41	15	46
20	68	31	119	11	43	53	19	40	4	58	10
21	69	29	33	57	43	37	11	26	34	8	45
22	72	22	18	30	42	22	6	33	32	1	7
23	78	16	11	37	39	25	2	55	27	0	19
24	90	0	7	35	27	0	0	25	27	0	8
25	113	24	5	19	23	0	7	3	25	9	4
26	148	31	5	2	22	6	4	7	20	25	3
27	175	37	6	52	22	6	21	12	37	24	9
28	189	36	10	26	22	6	21	22	2	24	8
29	196	33	16	22	22	5	24	4	9	40	19
30	200	2	28	31							18
31	202	26	74	38							17



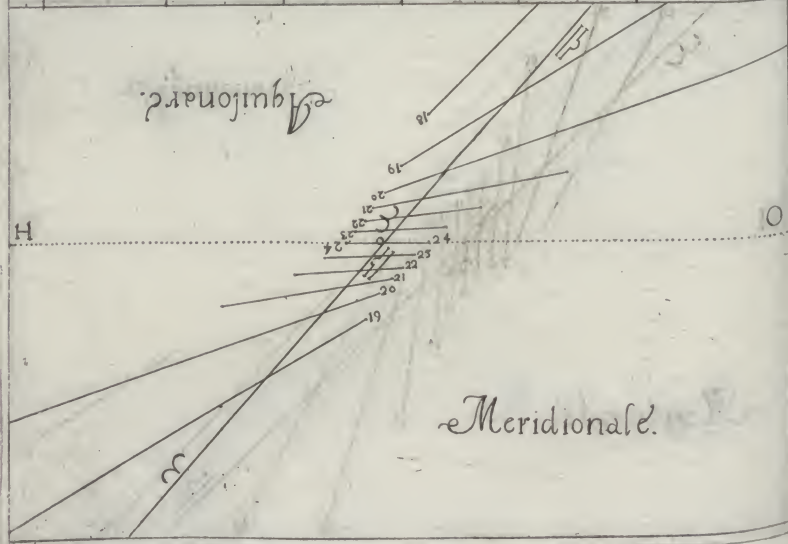
45.	
cri.	H. Aquilo
bra.	
M	
23	7
46	6
46	5
25	4
2	3
37	2
16	1
49	24
19	23
31	22
41	21
48	20
De	19
M	18
17	17

Tab. CLXXIX.		Declinatio ad Ort. Gra. 89. Lat. 45.									
H. Meridi.	H. Aquilo	Tropic. Capric.			Aequinoctialis.			Tropic. Cancr.			H. Aquilo
		Arcus.		Vmbra.	Arcus.		Vmbra.	Arcus.		Vmbra.	
		G.	M.	P.	G.	M.	P.	G.	M.	P.	
19		291	.	10	63	.	25				5
18		289	.	19	26	.	26	315	.	1082	43
17		283	.	18	15	.	30	315	.	1442	46
16		277	.	28	10	.	0	315	.	3020	13
15		261	.	44	6	.	40	315	.	4411	45
								338	.	38154	13
								339	.	5937	6
14		233	.	19	5	.	7	316	.	196	44
13		299	.	46	5	.	44	318	.	83	4
12		178	.	30	8	.	13	90	.	00	13
11		167	.	42	12	.	30	132	.	283	33
10		162	.	10	20	.	9	133	.	487	8
										55	56
										56	5
9		159	.	24	38	.	40	134	.	2212	20
8		158	.	30	188	.	59	134	.	3621	25
7								134	.	4947	13
6										104	57
5										109	6
										111	4
										77	16
											19



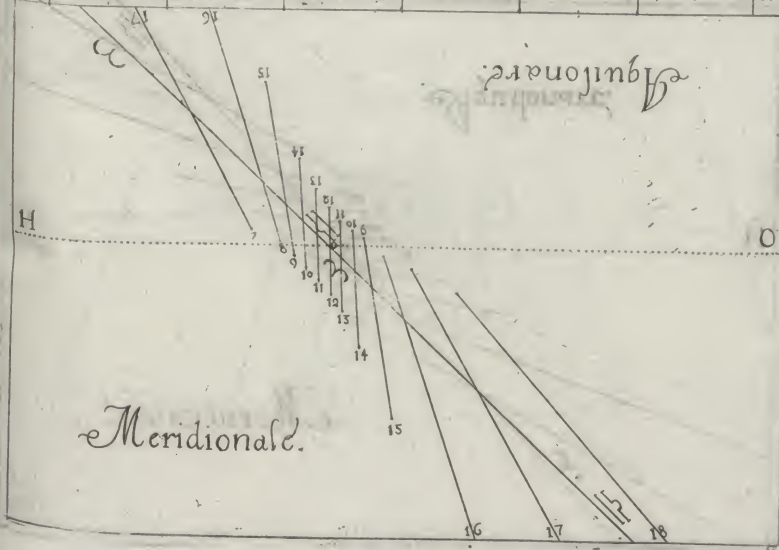
CLXXX^{78b} Declinatio ad Occas. Gra. 89. Lat. 48.

H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquil.
	Arcus.	Vmbra.	Arcus.	Vmbra.	Arcus.	Vmbra.	
	G.	MP	MG	MP	MG	MP	M
17					21	56 66	39 7
18			44	59 982	43 16	48 27	11 6
19			44	46 42	46 14	24 15	84 5
20	68	32 154	13 44	30 20	13 6	8 10	17 4
21	69	36 35	54 44	16 11	45 350	26 8	31 3
22	72	35 19	14 43	41 6	44 322	57 5	54 2
23	78	29 12	0 41	52 3	4 291	3 6	0 1
24	90	0 7	53 270	0 0	13 270	0 8	23 24
25	112	36 5	53 227	32 3	23 258	51 12	47 23
26	146	41 5	10 226	15 7	8 252	56 20	44 22
27	173	54 6	52 225	38 12	20 249	50 40	17 21
28	188	26 10	22 225	24 21	23 248	34 210	15 20
29	195	51 16	12 225	11 47	13	Alt. Pol.	19
30	199	38 28	5			P. M.	18
31	201	16 71	48			982	43 17



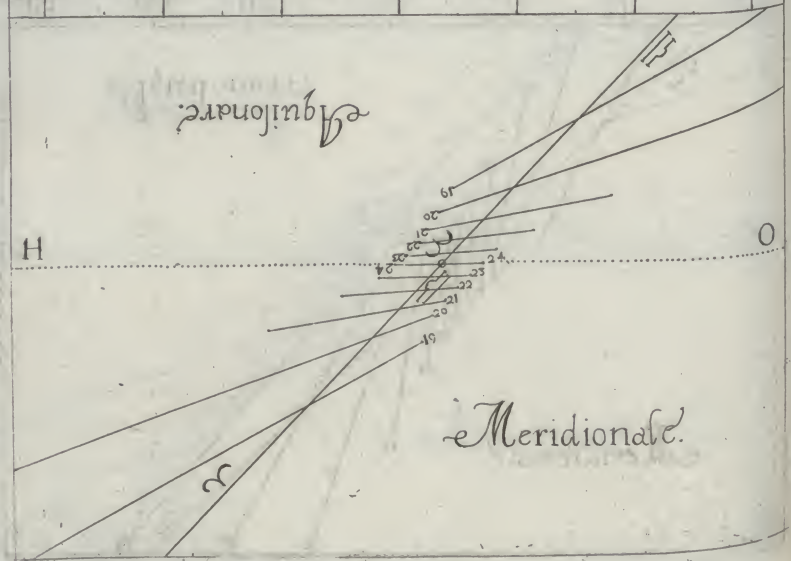
Tab. cxxxii Declinatio ad Ort Gra 90. Lat 45.

H. Merid.	Tropie Capric.			Aequinactialis.			Tropie Canceri.			H. Aquila
	Arcus.	Vmbra.		Arcus.	Vmbra.		Arcus.	Vmbra.		
	G.	MP.	MG.	G.	MP.	MG.	G.	MP.	M.	
19	291	8 69	0	45 Altiud G45 Vmbraurum	Infinita.					5
18	289	14 27	36							6
17	285	8 16	3			44	47			7
16	277	18 10	19	6 Lineam ad et ibi fat puncta	Vmbraurum	20	47 338	33 176	49 8	8
15	262	10 6	56			12	0 339	43 37	52 9	9
14	234	48 5	19			6	56 342	44 19	55 10	10
13	201	45 5	47	Duc et ibi fat puncta	Vmbraurum	3	13 348	39 12	26 11	11
12	180	0 8	12			0	0 360	0 8	12 12	12
11	168	39 12	26			3	13 21	45 5	47 13	13
10	162	44 19	55	Duc et ibi fat puncta	Vmbraurum	6	56 54	48 5	19 14	14
9	159	43 37	52			12	0 82	10 6	56 15	15
8	158	33 176	49			20	47 97	18 10	19 16	16
7				Duc et ibi fat puncta	Vmbraurum	44	47 105	8 16	3 17	17
6							109	14 27	36 18	18
5							111	8 69	0 19	19



Tab. CLXXXII		Declinatio ad Occas. Gra. 90. Lat. 45.									
H. Merid.	Tropic. Capric.		Aequinoctialis.		Tropic. Cancr.		H. Aquilo				
	Arcus.		Vmbra.		Arcus.			Vmbra.			
	G.	M P	MG.	M P	MG.	M P		M			
17						21	58	69	0	7	
18					Infinita.	19	14	27	36	6	
19					44	47	15	8	16	3	
20	68	33	176	49	20	47	7	18	10	19	
21	69	43	37	52	12	0	352	10	6	56	
22	72	44	19	55	6	56	324	48	5	19	
23	78	39	12	26	3	13	241	48	5	47	
24	90	0	8	12	0	0	270	0	8	12	
25	111	45	5	47	3	13	258	39	12	26	
26	144	48	5	19	6	56	252	44	19	55	
27	172	10	6	56	12	0	249	43	37	52	
28	187	18	10	19	20	47	248	33	176	49	
29	195	8	16	3	44	47					
30	199	14	27	36							
31	201	8	69	0							

Duc lineam ad. Altitud. Gr 45. et
ibi fac puncta Vmbrarum.

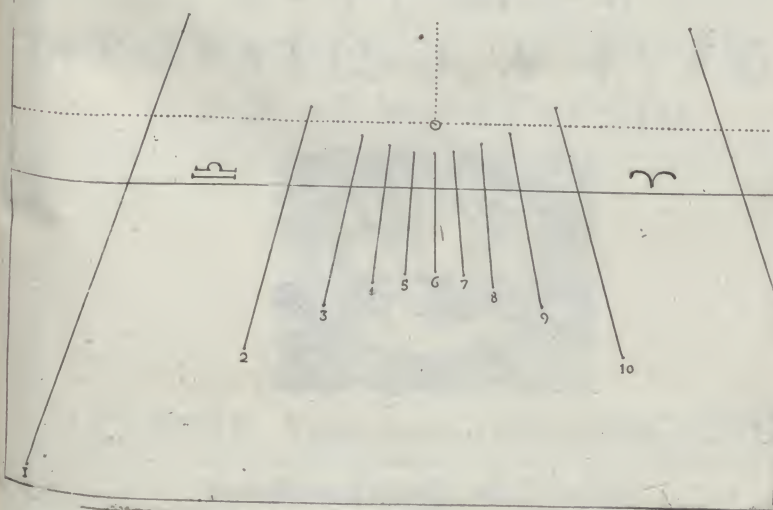


45.	H. Aquilo
cri.	ibra.
M	
0 7	
30 6	
3 5	
19 4	
56 3	
19 2	
47 1	
12 24	
26 23	
55 22	
52 21	
49 20	
19	
18	
17	

Tab.
CLXXXIII

Pro Horologio Horizontali more antiquo ad La Gr⁴⁵.

H. Merid.	Tropic. Caprie.				Aequinoctialis.				Tropic. Cancr.				H. Aquilo
	Arcus.		Vmbra.		Arcus.		Vmbra.		Arcus.		Vmbra.		
	G	M P	MG	M	P	MG	M	P	MG	M	P	M	
12	124 .	20	Infinita.	90 .	0	Infinita.	55 .	40	Infinita.	12			12
11	111 .	56	56 .	14	79 .	16	64 .	26	47 .	52	115 .	8	11
10	98 .	46	25 .	30	67 .	46	31 .	46	39 .	27	60 .	47	10
9	85 .	20	14 .	55	55 .	10	20 .	47	30 .	24	43 .	16	9
8	68 .	33	9 .	20	39 .	14	15 .	29	20 .	43	33 .	20	8
7	42 .	33	6 .	1	20 .	44	12 .	52	10 .	30	31 .	36	7
6	360 .	0	4 .	44	0 .	0	12 .	0	360 .	0	30 .	28	6
5	317 .	27	6 .	1	339 .	16	12 .	52	349 .	30	31 .	33	5
4	291 .	27	9 .	20	320 .	46	15 .	29	339 .	17	35 .	20	4
3	274 .	40	14 .	55	304 .	50	20 .	47	329 .	36	43 .	16	3
2	261 .	14	25 .	30	292 .	14	31 .	46	320 .	33	60 .	47	2
1	248 .	4	56 .	14	280 .	44	64 .	26	312 .	8	115 .	8	1



Handwritten table with multiple columns and rows of numbers, likely a ledger or account book. The text is faint and difficult to read.



Vertical text on the right margin, possibly a page number or index. Visible characters include 'C', 'T', 'A', and 'V'.